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MANUAL
OF THE
DISEASES PECULIAR TO WOMEN

From the Author

MANUAL

OF THE

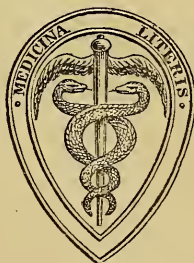
DISEASES PECULIAR TO WOMEN

BY

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To

CHARLES HENRY CARTER, M.D.,

SENIOR PHYSICIAN TO THE HOSPITAL FOR WOMEN, LONDON,

THIS WORK IS DEDICATED

BY

THE AUTHOR,

IN ADMIRATION OF THE UNOSTENTATIOUS MANNER

IN WHICH HE HAS DEVOTED HIS LIFE

TO RELIEVE DISEASE,

AND IN TOKEN OF A FRIENDSHIP OF MANY YEARS.

PREFACE

THIS work is produced after a prolonged study and extensive experience of the diseases peculiar to women. It is founded upon carefully observed facts, and as little superfluous matter as possible has been introduced. The details of operations have been purposely omitted, as the manual is intended more especially to meet the requirements of the general practitioner in his every-day work. No illustrations have been given, as these increase greatly the expense in production, and it is extremely doubtful whether they ever are, in this branch of medicine, of any practical utility.

Lavoisier said "one would never give anything to the world if he delayed doing so until he fully attained unto his ideal aims, which always seem more distant the more one increases one's efforts in the attempt."

18, GORDON SQUARE, W.C.;

July, 1893.

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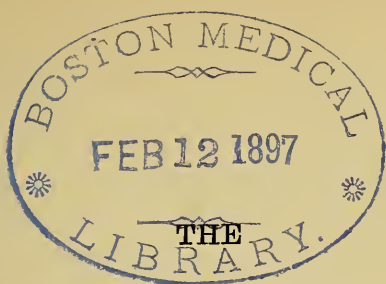
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DISEASES PECULIAR TO WOMEN

CHAPTER I

THE CONSTITUTION OF WOMAN

GENESIS, reproduction, or generation, is effected in the animal kingdom either sexually or asexually. In some cases asexual genesis is occasionally interrupted by sexual genesis. Given a generation of perfect males and females, the germinal elements derived from these individuals respectively meet, coalesce, and segment, producing individuals which are neither male nor female, but which possess the power of developing from buds other organisms destined to become fertile males and females, and these in turn are only capable of giving birth to a progeny through the agency of sexual congress. In man and the majority of the higher animals we witness no such variation in the method of perpetuating the race. The mode of reproducing is constant. It is always sexual. Each generation by gamogenesis produces males

and females which are perfectly homologous—structurally and functionally—to its own. In all evolution is carried out on one common plan, and the general structure is the same in the two sexes.

In the human race there is manifested at an early period in life a marked difference between the two sexes, not only as regards their physical but their mental qualities. The difference is not stamped on any one organ of the body, neither is it revealed in the function or group of functions manifested by the organs of generation; it is rather an association of such, and is the outcome of a peculiar molecular and molar state, which is inherent in every organ and structure of the body. The difference is universal or constitutional; it pervades the mental as well as the physical phenomena.

The one sex can and does exist without the other; each is endowed with all the qualifications requisite for a life of independence. In order, however, that the race may not become extinct, coalition of two individuals of different sex is necessary.

Under favorable circumstances the germinal elements derived from two individuals of a different sex meet, coalesce, and undergo segmentation. Although for a time there exists no evidence of sexual differentiation in the embryo, still the ultimate form, whether it be male or

female, is prior to all segmentation; what, in fact, is true of the segregate, of every tissue and organ of the body, is likewise true of the aggregate of the individual. These minute masses of protoplasm, known as sperm and germ elements, possess not only the power of developing with the utmost precision an organism of great structural complexity, but also the power of calling into existence at the opportune moment any predestined state, apart altogether from the effect such may exert upon the well-being of the individual. The apparently indefinite segmenting germinal mass has in it the anticipated man or woman; it carries with it the "promise and the potency" of the future.

At an early period in the developmental evolution of the human embryo one discovers at a superficial glance evidence in the configuration of sexual differentiation. As I have already remarked, variation in the external configuration alone does not constitute the difference between the male and the female. From the time of birth till the time of death, be the existence longer or shorter, the careful observer will recognise a multitude of mental as well as physical qualities which serve to distinguish the one sex from the other. During the early years, whilst all the structures and organs of the body are as yet immature and in a state of active growth, the actual physical qualities differ but

little in the two sexes. From an early period, however, we note the existence and manifestation of well-defined and different mental phenomena. The girl evinces a strong domestic tendency, but the boy has little or no sympathy with such an apparently inactive life. At play there is a noteworthy and characteristic difference in the behaviour of the boy and the girl. The boy, rough and boisterous, lacks that delicate mode of manipulation which is typically effeminate.

When pubescence is attained, sexual divergence becomes physically and mentally more marked. At this period there is engendered a passion, more or less strong, which, through a strange magnetic influence, creates a feeling of dependence, a correlation which is not necessary for the life of the individual, but which is a provision of nature to ensure as far as possible the continuance of the race. "The appetite," says Bain, "that brings the sexes together is founded on peculiar secretions, periodically arising after puberty, and creating an uneasiness until discharged or absorbed. The organic necessity here is of a less imperious kind, and the motive power lies most in the delight of gratification."

The transition is gradual. The boy, as he passes into manhood, becomes more robust and vigorous—qualities which fit him better for the hardships and struggles of life. Too soon he

experiences the sternness of the world, and is daily taught the lesson of survival of the fittest. The girl, as she develops into womanhood, remains more or less ignorant of the wiles of life; she is gentle, sympathetic, and kind—qualifications which fit her well for the functions she may be required to perform. "Female beauty," says Jeffrey, is explained by being "two signs of two sets of qualities—the first, youth and health; the second, innocence, gaiety, sensibility, intelligence, delicacy, or vivacity."

In the case of the female the childlike disposition is in a marked degree maintained. As she advances towards puberty she becomes shy and somewhat retiring.

In looking at the skeletons of an adult male and female, one is struck with certain evident and easily recognisable characteristics, which enable us to reveal conclusively the sex, and this apart from any preconceived knowledge. The majority of bones individually are even rightly considered emblematic of the sex. The bones belonging to the female are less massive and more delicate in structure than those belonging to the male, whilst the bony irregularities produced in association with the attachments of muscles—especially those in common use—are less pronounced. The bones of the male are predictive of strength, whilst those of the female are slender.

The most typical skeletal deviation is noted about the pelvis and lower limbs. The female pelvis is less deep perpendicularly, but wider and more capacious than that of the male. This provision is, undoubtedly, to meet the requirements of nature, in so far as procreation is concerned. The larger pelvic cavity is due to the greater expansion of the ilia and the greater convexity of the innominate bones in the female, as compared with the male. In the female, the sacrum is flatter and broader. The pubic bones are less closely united at the symphysis, and the pubic arch is wider. The capacity of the pelvic outlet is greater in the female than the male.

In so far as the lower extremities are concerned it is observed that the angle made by the neck and shaft of the femur is less obtuse in the female, so that inferiorly the thigh bones converge markedly, and this convergence becomes more marked as the width of the pelvis increases. The external configuration and peculiar gait of the woman are largely accounted for by these facts.

The clavicle in the male is less straight, and is thereby more stable than in the female.

In consequence of a more extended bony pelvis the muscles originating here are less compact in the female than in the male, hence the greater thickness of the thigh, which is considered a type of female beauty. In the case

of the upper limb the state of affairs is reversed.

Altogether the structure of woman is more delicate than that of man. Her functions are much more easily disturbed, and exposure and privation are not so readily borne. It is evident, therefore, that nature intended her for a life of ease and comparative inactivity. The physical and mental state of woman we admit has been greatly modified by civilisation; still it is remarkable that the women of savage peoples will contrast with their male associates, and will evince a greater structural and functional delicacy. Nature intended man, wherever and under whatever circumstances he might be born, to be active and vigorous, whilst woman was endowed with a more feeble body, and was thereby rendered less capable of withstanding fatigue or enduring heavy toil.

The difference between the sexes is as marked in the mental as in the physical states. Woman, on account of her greater sensibility, possesses a more rapid power of discernment, but this discernment, unfortunately, is not founded upon reason.

If perpetuation of the race had depended upon reason, I fear the race would long ere this have become extinct. Instinct is especially prone to be disturbed by reason, and to be perverted by higher education.

The emotions are determined by molecular variations occurring independently of the will in the higher nerve-centres, and they are represented usually by well-defined expressions. The greater the sensibility of the individual, therefore, the more readily will these emotions and their correlatives be called into existence. It is likewise true that the more easily the molecular state of a body is disturbed, the more quickly, as a rule, will it return to its wonted state of comparative rest. The higher nerve-centres of woman are readily affected by impressions, but, equally quickly, they rid themselves of such. Not only is this the case, but we find evidence of a great proneness to variation. The woman whose nervous system is run down will cry and laugh almost simultaneously.

Stratagem is one of the strongest instincts displayed by woman. "A woman," said a philosopher, "lives to be beloved by all."

CHAPTER II

ON THE METHODS OF DIAGNOSIS

THE clinical history as detailed by the patient should be noted and investigated; any and every fact, however insignificant and trivial it may appear to be, is nevertheless worthy of attention.

For the recognition of the majority of the diseases peculiar to women the sense of touch is all-important. In order, however, that the impressions originating in this sense may be fully appreciated and utilised, much attention must be paid to its education. It is not as a rule a highly impressionable sense, but it is more trustworthy than that of sight or hearing, and it is undoubtedly less liable to be disturbed by illusions than the latter perceptions.

When disease of the pelvic organs is suspected the bi-manual method of examination should always be employed, and to effect this the patient may be asked to lie either on her back or left side. It consists in a thorough exploration of the structures in the pelvis by means of the finger of the right hand in the vagina, and

the fingers of the left hand pressed firmly but gently against the abdominal walls, and moved about according to the location of the substance we desire to grasp between the vaginal and abdominal fingers. To ensure as perfect an examination as possible it may be necessary to empty the bladder by the catheter. The position and size of the uterus should first of all be accurately determined, and thereafter the various quarters of the pelvis may be carefully explored. As this method of examination becomes better known, and is more diligently prosecuted, I feel convinced that the use of the uterine sound, either to aid in or verify diagnosis, will be readily discarded.

In an early stage of malignant disease of the cervix, and occasionally in other conditions, it is advisable to supplement the sense of touch by the sense of sight, and to effect this a vaginal speculum must be employed. For all ordinary purposes Fergusson's speculum will be found the most useful.

Frequently, on account of hæmorrhage from the interior of the uterus, it becomes necessary to dilate the cervical canal. This is best accomplished rapidly by means of Hegar's dilators. The short blade of a Heywood Smith speculum should be passed, and by it the posterior wall of the vagina should be retracted; the anterior or posterior lip of the cervix should then be seized

by the volsella forceps, and thus the uterus should be pulled down, and held conveniently for the passage of the graduated dilators of Hegar.

CHAPTER III

JOTTINGS CONCERNING THE DEVELOPMENT AND ANATOMY OF THE FEMALE ORGANS OF GENE- RATION

IN the human chick the reproductive and urinary organs are developed from a pair of symmetrical organs, the so-called Wolffian bodies. When fully formed these bodies fill extensively the abdominal cavity, and their structure resembles that of the permanent kidneys. This is a point worthy of attention, for wherever we find organs evolved from the same primordial structure it is reasonable to expect the perpetuation of a direct nerve communication. It is more than probable that a free nerve intercommunication exists between the kidney and the structures which excrete the menstrual discharge, and for this reason menorrhagia is not infrequently an association of kidney disease.

Various remnants of the Wolffian body can be detected in the adult female. The most constant is that known as the parovarium, or body of Rosenmüller. It is composed of tubes located in the broad ligaments, and these are a

common source of unilocular cystic tumours. The majority of broad ligament cysts are undoubtedly produced from these structures, but it is evident that all do not originate in this manner.

In all the amniota there exists in early foetal life a common cloaca, into which open naturally the allantois, the alimentary canal, the Wolffian and Müllerian ducts, and the ureters. Originally the two oviducts open independently into this cloaca. By the fusion of these two structures, however, a single uterus and single vagina are produced. If this normal fusion does not take place every possible variety of malformation may be observed. Occasionally we find a double uterus, and possibly a double vagina, or it may be a bi-cornuate uterus. Less frequently we find the uterus well developed, but no semblance of a vaginal canal, and this condition of affairs may result in the production of hæmatokolpos (hæmato-metra), *i. e.* distension of the uterus by menstrual discharge.

The hymen begins to make its appearance during the fifth month of foetal life. It is a membranous fold, apparently of the lining tissue, just as the vagina passes into the urino-genital sinus. Regarding the formation of the hymen, and the manner in which the common cloaca becomes divided into the urino-genital sinus and the anal aperture, our knowledge is still very

imperfect. We are ignorant, too, of the function of this structure, although it has been suggested that it may serve to maintain the sensibility for that epoch when the desire for sexual intercourse should be awakened. If the hymen is formed by an invagination at the spot where the internal and external genitals meet and coalesce it is odd that it is found in no other animal but man. As far as we can judge, it appears to be of no physical use.

The external sexual organs are developed, independently of the true organs of generation, from the epiblast or external germinal layer. Frequently I have found these organs well developed in women who possessed no semblance of a vaginal canal, nor trace of uterus nor ovaries.

A clitoris and nymphæ are found in other animals than man, in fact in some female animals the clitoris is very large. The latter structure plays an active part in the production of the sexual feeling. In this country the nymphæ are often long and troublesome, but they never attain the dimensions observed in hot countries. In the case of the Hottentot women these appendages are long, and frequently they are cut in a variety of ways and used for decorative purposes. In certain districts in Africa the hood or prepuce of the clitoris, which is formed by the union of the nymphæ, is so long that it

covers the meatus urinarius and the entrance to the vagina, and consequently the women have to be circumcised.

The ovary is essentially a glandular structure. It is developed independently of the uterus and Fallopian tubes from a distinct portion of the Wolffian body. Strictly speaking, therefore, it is not a uterine appendage. It sometimes happens that the uterus and other structures entering into the formation of the genital tract are well developed, whilst the ovaries are absent or badly developed, or again the ovaries may be present, and in an active condition, whilst no vagina nor uterus can be detected.

It is apparently believed that no egg cells are produced in the human ovary after birth. Each reposes quietly in its follicle whilst the growth and development of other organs is proceeding until the period of puberty is attained, when a renewed period of activity for the ovary commences. In the human female the escape of the egg from the Graafian vesicle is effected by an exudation of serous or bloody fluid, whereby the intra-vesicular tension is so augmented that rupture of the confining capsule takes place. If this secretion is not poured out, or is defective in amount, the ovum is detained, and fecundation is rendered impossible. In the human female, as well as other animals, it is evident that eggs exist prior to conception, and that

they are often expelled from the body without being fecundated. As an ovum reaches maturity it may naturally escape from the ovary. It may escape independently of any influence on the part of the male. The secretion which determines the rupture of the Graafian vesicle may gradually accumulate, or it may be poured out, somewhat suddenly, during sexual excitement.

The egg as it escapes from the ovary passes into the Fallopian tube, and from thence into the uterus. In the case of some of the lower forms of animal life, however, the generative products are actually poured out into the abdominal cavity, and occasionally they pass from the body along the excretory ducts of the kidney.

It is not yet definitely settled whether fecundation most commonly takes place in the uterus or the Fallopian tube, although I am of opinion that this phenomenon occurs, as a rule, in the latter structure.

In gynæcological practice the expression "pelvic floor" is often used, but all authorities do not attach to it the same meaning. The term is evidently a faulty one under any circumstances; as, however, it is practically only of use for descriptive purposes I restrict its meaning to that irregular surface on which the bladder rests, through which the cervix uteri passes, and which, posteriorly, enters into the formation of

Douglas's pouch. The expression is used in an imaginary sense, and allows us to speak, for example, in anteversion or retroversion, of the body of the uterus lying forward or backward, and resting more or less completely on the pelvic floor. Some writers describe the pelvic floor as including the whole of the soft structures that close the inferior outlet of the pelvis. Its lower limit they say is formed by the skin, but they experience great difficulty in defining its upper limit, in consequence of the close incorporation of certain organs with this so-called pelvic floor. Some authorities admit that the bladder enters into the formation of the pelvic floor, whilst others again include both bladder and rectum. It is quite evident that the expression will never be used in any real sense, and it may be considered advisable to restrict its use for descriptive purposes alone, and employ it in an imaginary sense, as I have already suggested.

Strictly speaking, we cannot consider the pelvic floor, in its widest sense, as a support to the superimposed viscera, for throughout the universe there exists a cohesive affinity, by virtue of which the position of organic as well as inorganic structures is maintained. The intestines possess a certain amount of inherent tone, under ordinary circumstances, which renders them buoyant, and we can hardly speak of them as possessing weight. In the case of

quadrupeds we must not assume that the abdominal viscera are sustained as a weight would be by the ventral wall of the abdomen, nor can we assert that, in consequence of the erect position of man, the weight of the abdominal organs is transferred to the pelvic floor.

CHAPTER IV

ON THE EVIDENCE OF A UTERINE NERVE-CENTRE IN THE MEDULLA OBLONGATA

THE whole molecular world, organic as well as inorganic, is, as far as we can ascertain, in constant motion.

In consequence of this well-established principle every function of the body may rightly be considered as resulting from a change in the molecular state of the organ manifesting such, and as being the expression of a correlative variation occurring in its representative nerve-centre.

Through the agency of long continuance the usual visceral disturbances are now carried on in a somewhat automatic manner, and fail to excite any feeling, although they may at one time in the evolution of higher organisation have produced a conscious sensation. In no organ do we find these revelations so well depicted as in the uterus. In every typically healthy woman this organ, so long as it is free from the influences of gestation and lactation, is periodically, for a greater or less length of time, the seat of a regularly recurring functional

variation in its molecular state, evidenced by the emission of a more or less marked hæmorrhagic discharge, and which to all intents is its sole manifestation. The disturbance is evolved quite independently of the will, and apart altogether from any definable excitation. It appears to be induced spontaneously through the agency of an automatic nerve-centre, and fails in consequence to produce any conscious sensation. When, however, the uterus becomes the habitat of a developing ovum, or prior to this occurrence and whilst segmentation is as yet progressing in the Fallopian tube, the waves of motion radiated by and from the germinal mass, affect in a very decided manner the molecular state of the uterus, and determine a cessation of its routine function, and consequently of its regularly recurring manifestation of activity. Impregnation having resulted, other well-defined symptoms, in addition to that of the cessation of menstruation, are usually engendered, and these help, not only to guide the woman in arriving at a definite conclusion regarding her state, but aid us very materially in approximately estimating the duration of pregnancy.

The symptoms associated with pregnancy to which I wish more especially to draw attention, as indicating the existence of a uterine nerve-centre in the medulla oblongata, are sickness and cough.

It has been alleged through the agency of experiments that the sexual centre is located in the lumbar region of the cord. This opinion, however, appears to me to be founded on no very substantial basis. The mere fact that all, or nearly all, the sexual phenomena may be witnessed in animals after the lumbar portion of the cord has as far as possible been isolated by section, is no very special criterion. The respiratory centre is located in the medulla, yet under special circumstances all the movements associated with respiration may be carried on after the medulla has been entirely removed.

From the earliest period of existence every organism has been endowed with two distinct qualifications: first, that of maintaining self; second, that of perpetuating the species.

In the most primitive state the double function was performed by a uniform mass free from any semblance of structural differentiation. As we pass from unicellular to multicellular organisms we expect to find somatic and reproductive cells. This differentiation is not yet absolute. In the case of some of the lower metazoa the somatic cells still evince a disposition and capability for reproduction, as occasionally by a process of budding new individuals are actually produced by these cells. Habitual localisation of function, however, produces eventually a specialisation of structure, and with it the evolution of a nerve

tract whereby interdependence is maintained. It is therefore feasible to suppose that the nerve-centre, which regulates the process of assimilation (the pneumogastric nerve-centre) is either in close apposition, or at least in more or less direct communication, with that centre which presides over the organs of generation. All the visceral functions are now performed automatically, and appear to be regulated by nerve-centres located in the medulla oblongata. It is feasible, therefore, to surmise that the uterine functions are governed by an automatic centre—a centre which, because of some innate quality, is thrown into a state of trepidation, and produces thereby evidence of associated disturbance in the uterus itself.

When the uterus becomes the nidus for a developing germinal mass the molecular state of the organ is altered, and certain new impulses are generated. The waves of motion resulting from segmentation of the ovum and further evolution of the chick are radiated through the agency of the uterus and its afferent nerve-fibres to the uterine or reproductive centre. These disturbances occurring in the uterus are in excess of those commonly generated; so, too, the disturbances correlatively produced in the uterine centre are greatly in excess of those usually developed. The extra amount of motion must discharge itself in some other direction

until time has accustomed the uterine centre to the augmentation. The direction that the overflow of energy shall take is determined according to existing nerve communications, and the centre which is likely to receive this overflow is that which is in closest proximity to that receiving the impulse. Considering, therefore, the intimate relationship that exists throughout life between the process of assimilation and the process of generation, it is not astonishing that the excess of molecular motion transmitted to the uterine centre should be radiated to and expend itself upon that governing the nutritive processes generally. In consequence of this, sickness and cough are frequently early associations of pregnancy. At present we know but little regarding the nervous mechanism of vomiting. The respiratory centre appears, however, to participate in the act. Both phenomena, however (sickness and cough), in the pregnant woman may with much assurance be attributed to molecular radiations from the uterine to the pneumogastric centre. Usually, however, in the course of a few months, through the agency of habit, the pneumogastric centre becomes tolerant, and the symptoms evidencing disturbance in this centre coetaneously disappear. It is difficult to understand why the sickness should be experienced, more especially, although not solely, in the morning. The impressionability

of our nerve-centres varies. It naturally falls during the time of sleep; in fact sleep is a consequence of this decrease. Towards the waking period the energy again increases. In the early morning there are stimuli from the intestinal tract, and especially from the empty stomach. The state of the stomach may therefore, it would appear, aid in determining this somewhat anomalous phenomenon. The change, too, from the recumbent to the erect position may, after sleep, render the whole nervous system more liable to explosive disturbances.

The more highly unstable the nervous system is generally, the more likely is a woman when she becomes pregnant to suffer, markedly and for a lengthened time, from sickness, whether matutinal simply, or more or less constant. It is well to remember, however, that the inherent tone of the uterus itself will affect materially the molecular radiations, engendered by the developing germinal mass and transmitted through the agency of the uterine tissue to the nerve-centre. The resulting disturbances will be correlatively augmented or diminished according as the tone of the uterus is high or low. If the uterus is flaccid no sickness may be experienced throughout the period of pregnancy, and the movements of the foetus are not so readily appreciated as a rule under such circumstances.

CHAPTER V

MENSTRUATION AND ITS DISORDERS

Menstruation

THE age at which the menstrual discharge first makes its appearance depends upon climatic and social influences. In this country it is looked for about the age of fourteen. It is usually manifested earlier by the girls who inhabit our large towns and cities than by those who live in the country. In hot countries it may appear at the early age of seven or eight, whilst in cold countries it may be delayed until the age of twenty. Once established it recurs more or less regularly in England every three or four weeks, during a period of thirty-two years. It sometimes happens, however, that there is a lapse of twelve or eighteen months between the first and second menstruations. As a rule the discharge continues for from three to six days, and escapes *guttatim*. In cold countries it is less copious than in warm.

It is generally stated that clotting of the menstrual discharge is prevented because of the acidity of the vaginal secretion. It is doubtful,

however, whether we can accept this dogma, for clinical experience leads us rather to believe that the fluid or lumpy condition of the catamenial discharge depends upon the physico-chemical state of the structure secreting it.

The majority of authors affirm that the mucous membrane of the uterus is disintegrated and shed during each menstrual flow, and that complete regeneration of this structure takes place before the next menstruation. Under such circumstances the discharge comes from the small blood-vessels which are opened during the process of disintegration. "The catamenial discharge," says Muller, "differs from ordinary blood in no other respect than that of containing only a very small quantity of fibrin, or none at all." If, however, this hæmorrhagic discharge comes from opened vessels, it is difficult to understand why it should differ at all from ordinary blood. My own opinion is that this discharge is an excretion from the glands which stud the uterus and the Fallopian tubes, and that under ordinary circumstances the uterus is never devoid of mucous membrane. The excretion is in fact produced in exactly the same manner as any other secretion or excretion of the body.

It is generally admitted that ovulation and menstruation are coincident. In the human female, however, the egg is so small that its

escape from the Graafian vesicle is effected through the agency of an exudation of serous or bloody fluid, the tension resulting therefrom causing the vesicle to rupture. It is quite possible that this secretion may therefore either accumulate gradually, and that rupture may take place just before menstruation, or it may be poured out rapidly during sexual excitation, and the ovum may then escape from the ovary. It must be allowed that an ovum is frequently shed independently of the occurrence of menstruation.

During lactation the catamenial discharge is commonly in abeyance for about nine months, but many women menstruate regularly whilst suckling from the fifth or sixth week after the confinement. Whether the menstrual discharge has or has not reappeared it sometimes happens that impregnation occurs whilst the child is being nourished by the mother.

Menstruation is a periodic phenomenon which is determined probably by some physico-chemical disturbance of a nerve-centre located in the medulla oblongata, and in close apposition with the pneumogastric centre. Prior to its occurrence there is an increased determination of blood to the whole genital tract.

Dysmenorrhœa

In many cases the pain complained of in

association with menstruation is due to some decided organic change, inflammatory or otherwise, which has developed in or around the organs of generation. Pain so caused will be dealt with when we discuss the various diseases in which it is a well-marked symptom.

The class of case which at present concerns us is that in which pain, more or less severe, is complained of in association with, and generally has existed ever since the establishment of menstruation, and in which the most careful examination of the pelvic organs fails to detect, in or around them, any evidence of change of a pathological character. The pain, in fact, is apparently due to some molecular or chemical change taking place in one or more of those structures which are concerned in the process of reproduction, or in consequence it may be of some correlative disturbance occurring in other neighbouring organs.

There may be a more or less imperfect development of the organs of generation, but pain is not necessarily a result of arrested growth.

Regarding the so-called obstructive dysmenorrhœa, I do not believe that stenosis of the cervix—not even the “pin-point os uteri”—is a cause of pain during menstruation.

The majority of the women of civilised countries experience either discomfort or more or less pain during menstruation. The pain is

generally diffuse, and is referred to the lower part of the abdomen. It is evidently due to some disturbance of the sympathetic system.

The states correlated with menstruation which yield pain are—

1. Changes in the reproductive nervous apparatus.

2. Want of harmony on the part of those vessels which ought to respond to the nerve change evoking the menstrual discharge.

3. Abnormal states of the reproductive organs themselves.

4. Disturbances in the gut.

1. The pain may be due to some abnormal physical or chemical change occurring in the sensori-motor centre (which, as I have elsewhere endeavoured to show, is located in the medulla oblongata), in some portion of the nerve trunk, or, it may be, of its peripheral expansion. Regarding those states of nerve-tissue which cause pain, we know absolutely nothing.

2. The pain is often due to a tetanus in the muscular walls of the vessels, the blood being forcibly driven against constricted portions of the arteries. The pain so caused is often relieved by the application of warmth to the abdomen. The vaso-motor spasm may last a few hours, and when it passes off the pain subsides.

3. The pain is frequently associated with some abnormal condition of the menstrual discharge.

Instead of being fluid it may be more or less thick and lumpy, and its colour may be unusual. Alteration in the character of the discharge indicates some physico-chemical disturbance of the excreting structure. The tone of the uterus varies, as we know, from time to time in the unimpregnated, as well as in the pregnant condition. Pain or discomfort may therefore be produced by undue contraction of this muscular organ. When clonic spasm of the uterus is the cause of pain during menstruation, sickness is frequently complained of at the same time.

4. Fermentative and other changes in the gastro-intestinal tract are occasionally the cause of pain during menstruation. That the bowel is often disturbed during menstruation is evidenced by the fact that many women complain more or less of diarrhoea at this time.

Treatment.—In some cases attention to the diet and to the condition of the lower bowel will afford relief. The diet should be as non-stimulating as possible. When the pain is accompanied with sickness a large dose of bromide should be administered every night at bed-time for one week, about the mid-inter-menstrual period, and five grains of phenazonum every hour or half hour, beginning as soon as the pain or discomfort which augurs the menstrual process is experienced, and continued if necessary until six doses are taken.

In the majority of cases phenazonum tends to lessen the amount of the menstrual discharge, and this drug is seldom of benefit when, prior to its administration, the menstrual discharge has usually been scanty. In this class of case a large dose of bromide should be given every night, beginning immediately after a "period" and continuing for seven or ten nights, and thereafter a hot bath should be recommended every night until the next menstruation.

If the pain is due to gastro-intestinal derangement, one drachm of *Liquor Ammoniae Acetatis* and five grains of phenazonum should be administered every hour or half-hour until six doses are taken. In a few cases *Spiritus Ætheris Nitrosi* in hot water will relieve the pain.

Good results are sometimes obtained by dilating the cervix uteri, but this treatment should not be adopted, especially in the case of young unmarried women, until other remedies have been well tried for at least a year or eighteen months. My own opinion is, that the efficacy of dilatation is much over-rated.

In cases of this description, we cannot too strongly condemn the habitual use of opium or of hot alcoholic drinks at the time of menstruation. The latter is a common household remedy.

Membranous Dysmenorrhœa

The cases classed under this heading are cha-

racterised by shreds of membrane, or more or less complete casts of the uterus being shed during menstruation. It is doubtful, however, whether the term membranous dysmenorrhœa should any longer be retained, as probably "croupous endometritis" would be more applicable.

The membrane, as a rule, reveals microscopically the appearances characteristic of an inflammatory exudation.

Pain is often complained of during the expulsion of the membrane. It is not, however, an invariable accompaniment.

The membrane is commonly separated from its underlying structure, and expelled during menstruation, but not infrequently it is separated and expelled during the intermenstrual period. In the latter case no hæmorrhagic discharge may accompany it.

It may be manifested at any age during the child-bearing epoch, but it is more likely to appear after the age of thirty, and especially as we approach the age when the functional activity of the reproductive organs begins to wane.

It is often associated with a neurotic habit of body, and especially in those with a very decided gouty or rheumatic history.

Treatment.—The diet should be regulated. Chloride of ammonium, piperazine, anti-gouty and anti-rheumatic drugs may be administered

with marked benefit. A vaginal douche of plain hot water of a temperature of 120° F. should be recommended at night.

Amenorrhœa

The menstrual discharge may never make its appearance, since, on account of a freak of nature, the organs of generation have either not been evolved or are only partially developed. Occasionally, cases come under observation of women—even women who for years have fulfilled the marital duties—who have attained the age of thirty or forty and have never menstruated. It is alleged that in cases of this description impregnation has occurred. I doubt, however, whether the concurrence has ever been noted in this country.

Imperforate hymen.—In a few rare cases the hymen, instead of being perforated, completely occludes the ostium vaginæ. Under such circumstances the menstrual discharge does not escape externally, but accumulates primarily in the vagina, and eventually in the uterus and Fallopian tubes. An abdominal tumour may thus be produced. Every month, a girl who suffers from this condition, will sooner or later complain of a recurring feeling of discomfort. On examining the external genitals, a more or less marked degree of bulging of the hymen may be detected.

Treatment.—A small trocar should perforate the hymen, and the opening should be enlarged after the bulk of the fluid has been drawn off. In enlarging the opening the knife or scissors should be used, but never the cautery, because of the after-contraction which may result from the use of this instrument.

Amenorrhœa may, but it must very infrequently, be due to complete closure of the cervical canal, and this may be congenital or acquired.

Suppression of the menses is commonly attributable to some constitutional disturbance; with alcoholism and phthisis it is occasionally noted. It is usually a correlative of anæmia and chlorosis; occasionally, however, we witness menorrhagia as a result or at least as a concomitant of these blood disorders. It is often caused by shock, masturbation, and other influences which affect the nervous system. Frequently girls come under observation because they have ceased to be regular, but who otherwise not only appear to be, but affirm that they are in perfect health. In many of these cases the amenorrhœa is due to some obscure change in the nervous apparatus.

A rapidly developing ovarian cyst will sometimes induce amenorrhœa, so too may a fibroid which is developing between the layers of the broad ligament.

Pelvic inflammation as well as injury of the pelvic organs during a difficult labour may be a cause of amenorrhœa.

It is of course, as a rule, a physiological consequence of pregnancy.

Treatment.—The class of case which responds most satisfactorily to treatment is that which depends upon anæmia or chlorosis. Iron in some form or other should be administered, either the sulphate in pill or the perchloride in mixture. In a few cases it may even be necessary to use dialysed iron with or without arsenic. One most important point to attend to is the condition of the bowel, as the iron will not produce benefit so rapidly nor so decidedly if constipation is tolerated. A saline aperient like the following may be administered in the early morning before food is taken.

R	Mag. Sulph.	.	.	gr. 120 ;
	Sod. Sulph.	.	.	gr. 30 ;
	Acid. Sulph. dil.	.	.	℥x ;
	Tr. Zingiberis	.	.	℥x ;
	Aq. ad	.	.	℥j.

In water.

In cases in which amenorrhœa is due to shock or some other supposed nervous condition, a hot bath or even a Turkish bath may be recommended just before the time the menstruation should recur. As regards medicines, phosphorus and strychnia are the two which I have found

most useful. The phosphorus may be given as hypophosphite of lime and hypophosphite of soda—the two together—or as dilute phosphoric acid with liquor strychniæ. Other remedies have been strongly recommended, such as Potass. Permang., santonin, hydrastin, &c. I have tried the majority, but have failed to obtain satisfaction.

An attempt to excite the uterus by intra-uterine stem pessaries, whether of glass or metal, should not be resorted to, as more harm than good is likely to result from such a procedure.

CHAPTER VI

INFLAMMATION OF THE PERITONEUM AND CELLULAR TISSUE

Pelvic Peritonitis (Perimetritis)

THIS is an acute or chronic disease, consisting in inflammation, affecting it may be the whole, but more usually some part only of that serous membrane which, located within the cavity of the pelvis, enters not only into the formation of its walls and floor, but covers more or less completely the organs contained therein.

The appellation includes, therefore, perimetritis, peri-oophoritis, peri-salpingitis, and proctitis.

Although originating locally, the inflammation may by continuity of tissue spread to and affect the whole peritoneum.

Pelvic peritonitis is one of the most common, as well as most important of the diseases of women. It results in changes which often endanger life. Bands may form around the Fallopian tube, and favour the occurrence of extra-uterine pregnancy. The fimbriated extremity of the tube is often sealed by an attack of

inflammation, and if at the same time constricting bands exist, fluid—serum, blood, or pus—may accumulate and produce hydrosalpinx, hæmosalpinx, or pyosalpinx.

It may occur at any period of life, even before the establishment, or after the cessation of menstruation. Most commonly it develops during the child-bearing epoch, the organs of generation being then more vulnerable. In association with disturbance of the sympathetic system the serous membranes readily become the seat of inflammatory change. For this reason, apparently, the pelvic peritoneum is extremely apt to inflame during menstruation.

Causes.—In his work on “Perimetritis,” Duncan states that “the cellular tissue and the peritoneal membranes are protected, and are believed to be specially disinclined to original or idiopathic inflammatory action.” In so far as the pelvic cellular tissue is concerned I agree with this authority, but I cannot agree with him that the peritoneum is “specially disinclined to idiopathic inflammatory action.” My opinion is, that this membrane, like all the other serous membranes of the body, is easily disturbed, and readily inflames in consequence of changes occurring in the sympathetic. Through the influence of the sympathetic pelvic peritonitis is readily induced during menstruation, and when the pregnant uterus rids itself of its con-

tents. When it occurs during menstruation it may be due to cold; often, however, we are unable to assign a cause. When it follows abortion or parturition it is looked upon as being secondary, although it may be difficult and even impossible to sketch the relationship. In the puerperal state, inflammation of the uterus, simple or septic, is a common cause of pelvic peritonitis. Injury is an exciting cause, and this need not be severe, as some women are undoubtedly especially liable to this variety of inflammation. It is often caused by gonorrhœa, the inflammation spreading upwards from the vagina by continuity and contiguity of tissue.

Occasionally it is due to change in some neoplasm, or to the rupture of some cyst or abscess.

The indiscriminate use of medicated injections, and the adoption of other ill-advised methods of protection against impregnation, are potent agencies at work, which either directly or indirectly aid in producing the disease.

It is alleged that pelvic peritonitis is more common in primiparæ than multiparæ. This, however, is evidently due to the fact that it develops when the conditions which favour its occurrence are for the first time called into existence.

It may result in a thickening of the peritoneum and in adhesion of opposing surfaces, and thereby the organs contained in the pelvis may

be more or less firmly and completely glued together.

Serum may be effused, and this when confined and large in amount constitutes encysted serous peritonitis. This fluid will gradually be absorbed.

Pus may form and produce the so-called pelvic abscess. Fortunately these usually rupture into the sigmoid or upper portion of the rectum, and thus empty themselves. Very occasionally they rupture into the vagina or the general peritoneum.

Symptoms.—In a few cases the disturbance is ushered in by a distinct chill or rigor. In a small number of cases only do we find elevation of temperature, and this is even remarked when suppuration has occurred. When pus is accumulating, the temperature occasionally indicates what is taking place. In the majority of cases inflammation of the pelvic peritoneum occurs, at least at first, without producing any very decided manifestation of constitutional disturbance. Pain, slight or more or less severe, may be complained of in the lower abdomen, and may be referred more especially to one or other side. Occasionally the pain is accompanied by a feeling of nausea or even by vomiting.

Menorrhagia is a most common association of pelvic peritonitis, and in many cases it is this symptom alone which leads the patient to seek

advice. Little or no pain may be experienced whilst the hæmorrhagic discharge continues.

Pain, either before or after passing water, is also a common symptom.

If the lower bowel is involved the patient may complain of pain, or merely of a sensation of pressure in the "back passage."

In the more chronic cases pain is often experienced during coitus, and cohabitation often produces a more or less acute exacerbation of the inflammatory state.

Physical signs.—In some cases not only during the early days of but throughout an attack there is no physical sign. Abdominal and vaginal examination reveals merely more or less tenderness. In other cases the uterus is more or less fixed and surrounded by deposit, or the pelvic organs may be so extensively involved by exudation that structural differentiation is impossible.

After the inflammatory process has subsided and resolution has proceeded, the uterus may be drawn more or less markedly towards one or other wall of the pelvis, and its mobility may or may not be specially impaired. Sometimes the tubes and ovaries can be recognised involved in adhesions.

Treatment.—In the more acute cases the patient should be kept in bed; the diet should be non-stimulating. Poultices should be avoided. A

vaginal douche of plain hot water if there is no hæmorrhagic discharge should be recommended, as this undoubtedly favours resolution. The water should be as hot as can be borne comfortably, of a temperature varying from 105° F. to 120° F. If the patient's temperature is high, quinine should be administered by the mouth or by the rectum, according to the exigency of the case. For pain a mixture containing *Liquor Bismuthi et Ammon. Cit., Tr. Cardamom. Co., and Liquor Morphinæ Acetatis* will prove useful. Rest in bed, diet, and, if necessary, raising the height of the lower end of the bed is all that is requisite for the menorrhagia; if it is necessary to administer something to stay this, gallic acid and acid infusion of roses may be given, or dilute sulphuric acid with tincture of opium.

In the more chronic cases the diet should be regulated, and stimulants should, if necessary, be forbidden. The hot vaginal douche should be used every night (never in the morning). In many of these cases I have prescribed and obtained good results from a mixture like the following—

R	Calcii Chlorid.	.	.	gr. x;
	Glycerine	.	.	ʒss;
	Inf. Calumb.	.	.	ʒij;
	Aq. ad	.	.	ʒj.

Three times a day, after food.

Counter-irritants abdominally may be of use,

either liniment of iodine or a cantharides blister applied, especially immediately after a menstrual period.

Pelvic Cellulitis (Parametritis)

This is usually an acute, but in a few cases it appears to be a chronic inflammatory disease affecting some part of that areolar tissue which enters into the formation of the pelvic diaphragm, or which, strictly speaking, may be considered part of one or other of the pelvic organs.

The cellular tissue, which chiefly concerns us, is located between the peritoneal folds which enter into the formation of each broad ligament, and forms the pad which connects the bladder with the anterior wall of the vagina and the neck of the uterus.

This variety of inflammation may terminate in resolution, organisation, or suppuration.

It is less common than is generally believed.

Causes.—These may be divided into predisposing and exciting. In some cases there is undoubtedly a constitutional predisposition, but bad air, intemperance, and kidney disease are evidently predisposing causes. Some wound of the cervix or body of the uterus is absolutely requisite for its occurrence. The exciting cause is usually, besides a wound, the presence of some septic or infective material. For this reason pelvic cellulitis can only follow abortion,

parturition, and operations upon the cervix or body of the uterus.

Symptoms.—These necessarily vary according not only to the intensity but to the location and extent of the disturbance. Pain is a common symptom, but the amount of this appears to depend largely, if not solely, upon the extension of the inflammatory disturbance to the peritoneum. In some cases no pain is complained of, and in no case is it ever so decided as in pelvic peritonitis. The temperature becomes elevated, and the pulse accelerated, within thirty-six hours after exposure to the septic or infective material. Vomiting is a common symptom, and is more frequently noted in association with pelvic cellulitis than with pelvic peritonitis. The temperature will gradually rise and the pulse will increase in frequency, and if the case is likely to prove immediately fatal, it will do so between the fourth and seventh day after the initial manifestations of the disorder. Before death the pulse will number 160 or so per minute.

If the cellular tissue at the base of the bladder is involved, which, however, does not commonly happen, there is frequency of micturition, and pain on passing water. Usually, however, the cellular tissue of the broad ligaments is alone affected.

Physical signs.—There may be no tenderness of the abdomen. Vaginal examination may even

be negative; usually, however, some fulness can be detected, on careful examination, in one or other broad ligament—seldom in both.

Treatment.—This disease, tending to prove fatal rapidly, should be vigorously dealt with as soon as its manifestations appear. The food should be light and nutritious; quinine should be administered in good doses frequently, either by the mouth or rectum. If it is necessary to give by the rectum, the quinine should be suspended in beef tea ($1\frac{1}{2}$ ounces), to which may be added a small dose of tincture of digitalis and some brandy. If the rectum becomes irritable a small quantity of tincture of opium may be advantageously added.

Remote Cellulitis after parturition or abortion

Occasionally the cellular tissue in the pelvis escapes, and the inflammatory exudation takes place in the cellular tissue located between the abdominal muscles and the peritoneum, or in the cellular tissue of the flanks.

These cases generally terminate in suppuration.

CHAPTER VII

PELVIC HÆMATOCELE

THIS consists in an effusion of blood from some structure in the pelvis.

The hæmorrhage may be free or confined. If free the blood is poured out into the peritoneal cavity, if confined it may be poured out into an inflammatory exudation, or externally to the peritoneum into some pelvic structure, usually the broad ligament. The hæmatoma produced by an extravasation of blood into an inflammatory exudation is generally an intra-peritoneal hæmatocele.

Of the intra-peritoneal variety of hæmatocele two kinds may be observed.

1. That in which the blood escapes into the peritoneal cavity.

2. That in which the blood is poured out into an inflammatory exudation. In this case it is usually confined.

1. Free hæmorrhage into the peritoneal cavity.

When blood is poured out into the peritoneum it evinces very little tendency to coagulate, and consequently a large quantity may be lost before

nature attempts to arrest it, in fact, the bleeding may then be only temporarily stayed in consequence of the collapsed condition of the patient. This variety of hæmorrhage is therefore exceedingly liable to prove fatal.

Symptoms.—The patient commonly complains of having been suddenly seized with pain in the abdomen, and of simultaneously—unless when the hæmorrhage is slight—experiencing a sensation of faintness. If the bleeding continues and is profuse, the slightest movement made by the patient even as she lies in bed produces a feeling of intense exhaustion. Sickness is a frequent association.

Physical signs.—The face is pale and presents an anxious expression. The tongue is usually rather dry. The pulse is small and rapid, and now and then it may vanish altogether, returning, however, with every little effort which may be made by the patient. The abdomen, which is as a rule tender to the touch, may or may not be somewhat distended.

Vaginal examination.—As the blood shows but little disposition to clot, any abnormal condition noted in the pelvis is more likely to be the cause than the result of the hæmorrhage.

Causes.—The tendency at the present time is to believe that rupture of the sac of an extra-uterine foetus is the most frequent cause of intra-peritoneal hæmorrhage. In any given case,

however, I am not disposed to admit this cause unless the facts are very evident. Extra-uterine pregnancy is undoubtedly more frequently diagnosed than it should be. The existence of this condition must not be surmised simply because a woman has missed one or more periods, and an extra-uterine swelling is detected in the pelvis.

The veins, which course the uterus immediately underneath the peritoneal covering of this organ, occasionally become varicose, and intra-peritoneal hæmorrhage may result from the rupture of a vessel in this condition. Any other pelvic vein which has become unduly distended may rupture into the peritoneum.

Independently of tubal pregnancy the blood may come from the Fallopian tube, especially the fimbriated extremity of this structure. In this case the blood tends, however, to coagulate in and around the fimbriæ of the tube, and it seldom happens that a large quantity is thus extravasated.

Treatment.—As soon as the condition is recognised and a large amount of hæmorrhage has taken place, abdominal section should be advised. The seat of rupture should then be sought and dealt with according to circumstances.

2. The blood may be poured out into a plastic exudation, in which case it is usually confined.

The clinical history and symptoms in a case

of this description are often vague; this, of course, depends upon the fact that a woman may suffer from plastic pelvic peritonitis without requiring to take to bed, and without experiencing any very decided discomfort.

In one of my cases the patient came to me complaining simply of bearing-down pains in the "back passage," which she had experienced for one month. On examination I found a small swelling in Douglas' pouch of a spleen-like consistence. A few days later I was called by Dr Buckell, of Canonbury Square, to see this patient, as she complained of pain and faintness, and a large globular tumour was now detected abdominally reaching to the umbilicus. On examination I found the uterus pushed against the pubes and Douglas' pouch filled by a large and firm swelling which was continuous with the abdominal swelling. The tumour gradually disappeared, and in four weeks from the time of my seeing her on the second occasion some firm inflammatory bands and puckering of the posterior fornix of the vagina was all that remained to indicate that the patient had suffered from any pelvic disorder.

Treatment.—In cases of this class rest and careful dieting are all-important, and the same treatment should be adopted as is recommended in pelvic peritonitis.

Extra-peritoneal Hæmatocele

In this variety the bleeding usually takes place into the substance of one or other broad ligament. It occurs occasionally after the removal of ovarian and broad ligament tumours. It frequently occurs spontaneously, and this group demands our serious consideration.

Symptoms.—Many patients who suffer from this disorder get well without seeking medical advice, so slight may the symptoms be, and so little discomfort may result therefrom that the subject of this disturbance may not even take to bed.

It is frequently associated with a sudden arrest of menstruation. The symptoms may develop about the time when menstruation was expected to re-appear. Amenorrhœa may therefore be a correlative of this condition, but when recurring hæmorrhages take place, metrorrhagia may eventually be noted. The patient, as a rule, complains of a sudden attack of pain, and of experiencing simultaneously a feeling of faintness. The pulse is usually more rapid, but seldom is the temperature disturbed.

On examination a swelling may be felt in one or other lateral fornix, and extending more or less posteriorly. The uterus may be more or less displaced by the swelling. When the hæmor-

rhage is great the tumour may be felt above the true brim of the pelvis.

The phlegmon resulting from extra-peritoneal effusion of blood may gradually be absorbed, or it may suppurate and produce a pelvic abscess.

Treatment.—In the hæmorrhagic stage rest, careful regulation of diet, and general treatment. In the suppurative stage it may be necessary to open the abscess ; as a rule, however, they open of their own accord into the bowel or the vagina. When such an abscess opens externally it points in the groin. Occasionally the pus burrows towards the anus. It seldom happens that the abscess bursts into the peritoneum, but when it does death usually rapidly ensues.

CHAPTER VIII

IMPOTENCE AND STERILITY

A WOMAN may be said to be impotent when she is unable to perform the sexual act or when, although fitted for marital duty, there is inability to retain the seminal fluid. A woman may therefore be impotent without actually being sterile.

Strictly speaking it is impossible to offer an intelligible and at the same time comprehensive definition of the term sterility. As a rule a woman is said to be sterile when, during the child-bearing epoch, she lives under conditions favourable for reproduction, but fails to bring forth a living and viable child. It is apparent that this definition is not accurate.

The reproductive function is wrapt in obscurity. In the case of some of the lower animals the perpetuation of the species is effected by parthenogenesis. Under such circumstances a virgin mother brings forth young. In the case of man and the majority of animals two individuals, the one male and the other female, are

requisite for procreation. The fault causal of sterility may therefore be assignable to either individual, or even to both. The female plays undoubtedly the most important part in the process of generation, but she is less frequently the cause of her failure to become a mother than we are generally led to believe.

Gross, in his work on *male sterility*, affirms that one male out of every six is sterile. This corresponds with my own computation—one out of every six or seven, but I believe this is underestimated.

With regard to the female percentage I have elsewhere stated, and this after a most careful investigation and after eliminating as far as possible all doubtful cases, that one woman out of every fifteen is sterile. I am not disposed to reckon a woman as sterile until she has lived in wedlock five years.

Many diseases cause, or tend to cause, sterility. These can only be enumerated here.

Dyspareunia or pain during or from the attempt at coition.

Toxic discharge, cancerous, gonorrhœal, &c.

Disease of the lining of the uterus.

Fibroids and polypi.

Disease of the Fallopian tubes.

Disease of the ovaries.

Peritonitis.

Mechanical conditions about the cervix ex-

tremely rarely. I have, for example, seen a small valve-like prolongation of the anterior or posterior lip so cover the external os uteri that whilst fluids could escape from the uterine side it would be difficult for even the spermatozoa to enter from the vaginal side.

Sexual incompatibility is a fairly common cause of sterility. My meaning will be best communicated by an illustration. A dog of known sexual ability may cover a bitch under the most advantageous circumstances many times, and yet she may fail to conceive; if, however, this same bitch is covered by another dog she forthwith becomes pregnant. The same dog which failed in the first instance may impregnate the next bitch he covers. A similar condition obtains in the case of man. Every male and female mated is not fertile, yet each separately may be highly endowed with the power of procreation.

Changed conditions of life may induce sterility.

Women who tend to lay on fat rapidly are apt to become barren.

Absence of sexual desire and feeling is often a concomitant of sterility, and this is frequently due to masturbation.

Treatment.—In many cases by modifying the life and surroundings of both or of one of the individuals concerned the conditions inducing

sterility may be subdued. It is impossible, however, to dwell upon the obscure and trivial conditions which, when altered, may bring about a happy result. Each case must be thoroughly scrutinised and dealt with accordingly.

CHAPTER IX

THE DURATION OF PREGNANCY

It is of course important that we should, if possible, be able to advise a woman when pregnant regarding her probable date of confinement. Questions of this description we are expected to be in a position to answer. We ought, therefore, to fortify ourselves with such facts as may enable us to fix the date, even although it be but approximately.

In the case of the lower animals we find the average duration of gestation may be fixed, but we learn that it cannot be reckoned with certainty. This, it may be remarked, is so even in the greyhound, the horse, and special breeds of cattle, when every precaution has been taken to prevent the possibility of promiscuous intercourse, and when the date of covering or warding has been carefully noted. If after close observation, and in spite of the fact that due care has been exercised to eliminate every element of confusion, naturalists still experience difficulty in settling the question of the duration of gestation in the lower animals, it is not astonishing

that diversity of opinion should prevail regarding this phenomenon in the human female.

Let us consider briefly what condition of affairs obtains on this important subject with some of the lower animals, as a review of these may help us greatly in our investigations regarding the human female.

Fecundation does not necessarily take place at the time of copulation. It is evident, however, that it occasionally does, as women sometimes affirm that they experience a peculiar and indescribable sensation during a fruitful intercourse. According to some authorities there may in the human subject be an interval of fifteen days between the deposition of the semen and the fertilisation of the ovum. It is extremely doubtful whether the spermatozoa can maintain, even in the body of the female, an independent existence for such a lengthened period.

The duration of pregnancy is affected by a variety of circumstances, and it is quite possible that, like the menstrual epochs, it may vary according to the social position, life, and surroundings generally of the woman. If we compare domestic and wild animals we observe that domestication shortens the period of gestation. It is to a certain extent related to the age at which the parent attains maturity. The sex of the product, it is alleged, influences the duration, being longer for a male than a female. It is

considered, too, that the duration of pregnancy advances with the age of the mother.

When the same male and female animals are paired on several occasions and under apparently the same circumstances and conditions, and even when the product of such conceptions is of the same sex, the duration of the pregnancy may, nevertheless, be found to vary. This has been noted in the case of the giraffe. A female giraffe was covered by the male on April 1st, and on the 19th of June in the following year a male was born, the result of this pairing. The product on this occasion was carried 445 days. On a subsequent occasion the same male and female giraffes copulated on May 12th, and after an interval of 421 days a male was again born. After impregnation the female giraffe loses apparently the disposition to receive the male until parturition is completed.

Great care and attention is bestowed upon the rearing of prize fowls. In this case the impregnated ovum is deposited and hatched outside the body, and the majority of fanciers hatch the eggs by means of artificial heat. The facts gleaned from breeders of the domestic fowl are interesting and instructive. Under ordinary circumstances twenty-one days are required for hatching, either artificially or naturally, the eggs of any breed of the domestic fowl. It is not necessary either that the eggs placed under a hen or

in an incubator should all have been laid on the same day. If none are more than a week or ten days old no difference is observed in the maturation of any of them. When the eggs are treated in an incubator the requisite heat must of course be maintained, or if they are hatched naturally they must not from time to time be unduly exposed, and consequently chilled. Sometimes when a number of eggs are treated simultaneously in an incubator, one or more chicks make their exit on the twentieth day. Those hatched before the prescribed time usually turn out to be the strongest chickens, whilst any which make their appearance after the twenty-first day are usually weakly. If the temperature is not well maintained, as happens naturally when the hen covers the eggs badly, or spends too much time over feeding, then the chicks may be delayed one or more days in making their appearance.

Breeders consider that one male bird is sufficient for seven, nine, or even twelve hens; and cases, it is alleged, are on record in which one cock has served for the fertilisation of the eggs of thirty or more hens. It is therefore evident that the male bird must often impregnate ten, twelve, or more ova at a covering, and it is highly probable that an ovum may be fecundated before it is actually ripe for this process. We are apparently justified, too, in affirming

that ova fertilised by the same stroke, although expelled from the body of the hen during a period of seven to ten days, are nevertheless capable of being hatched on the same day. Mr Hew Crawford, of Hewitts Chelsfield, to whom I am indebted greatly for my knowledge on all questions regarding the domestic fowl, informs me that this phenomenon has been tested. "A laying hen," he says, "was put by with a cock, and after one copulation this hen was kept separate from male birds. Seven of the eggs laid thereafter by this hen were hatched, and a good average of chickens was obtained."

Reckoning from the time of warding, it is alleged that the greyhound bitch carries her young sixty-three days. Instances are, however, on record in which two bitches have given birth to young on the same day and yet one week intervened between their respective wardings. Discussing the question of the duration of gestation with the greyhound, Stonehenge says, "I am strongly of opinion that the nine weeks must not date from the access of the dog to the bitch, but from the middle of her heat." During twenty-one days the bitch is, as a rule, more or less in season, although she will generally only admit the dog during four or five days of this epoch, and these days are commonly the eighth, ninth, tenth, and eleventh days of her heat. Armed

with the knowledge of these facts, and guarding as we may against every possibility of promiscuous intercourse, it is nevertheless true that the duration of pregnancy in the greyhound cannot with certainty be reckoned; in fact, there may often be a difference of seven or ten days.

The information we obtain from an investigation of this subject in the case of the other lower animals is in like manner unsatisfactory. In the case of the mare the shortest duration of pregnancy is about 320 days and the longest about 419 days, and this gives a difference of ninety-nine days. The following table illustrates the difference in some other animals—

	Shortest Period.		Longest Period.		Difference.
Cow . .	240	.	335	.	95 days.
Sheep . .	143	.	161	.	18 „
Pig . .	104	.	143	.	39 „
Dog . .	58	.	65	.	7 „
Cat . .	53	.	67	.	14 „

In the case of a female python copulation took place on January 22nd, and the act was repeated several times until the end of February. On the 5th of May fifteen eggs were deposited, and around these the female coiled her body, forming thus a pyramid in the hollow of which the eggs lay. During incubation the temperature of this reptile's body is very slightly raised above the outside temperature, and yet the eggs were all hatched between the 3rd and 7th of July.

It is therefore evident that, as far as one can judge, the duration of gestation varies to a marked extent in all the lower animals, and this remark is equally applicable to the human race.

In the case of the lower animals, the generative organs are, in the majority, functionally active during certain epochs only, and with them the period of insemination may be fixed with certainty. In the human race, on the other hand, the organs of generation are apparently capable of fulfilling their function at any time, and it seldom happens that the date of insemination can be relied upon, consequently we must base our calculation of the duration of pregnancy upon other data than those employed for this purpose in lower animals.

When a woman becomes pregnant it generally happens that the menstrual discharge is held in abeyance, and it is agreed that under ordinary circumstances the date of the cessation of the last menstruation—an event which the individual may correctly observe—is the only one from which we can reckon the probable duration of pregnancy. After becoming pregnant a woman may menstruate once or oftener, or she may conceive whilst suckling and whilst the monthly discharge is still correlatively held in abeyance. Under such circumstances we are practically deprived of all data on which to base our calcula-

tions of the probable date of the confinement. It is generally believed that impregnation is more likely to occur immediately after menstruation than at any other time. Issmer says, "Close inquiry in cases where the date of conception can be fixed shows that the probability of impregnation during the fourteen days after menstruation compared with the probability during the remaining days is as 2.68 to 1." If an ovum is actually shed spontaneously during menstruation, then, considering the manner in which rupture of the Graafian vesicle is induced, I am of opinion that fecundation is more likely to take place before than after menstruation.

In the majority of cases when a woman is asked when she was last unwell she will usually give the date when the discharge made its appearance rather than the date on which the flow ceased. If, therefore, our calculation of the probable duration of pregnancy in the human female is to be reckoned from the last menstruation, we must determine whether the calculation should be made from the beginning or the cessation of this phenomenon, as thereby an error of four or more days may be made.

The majority of authors consider that the probable date of delivery should be fixed for the 278th day from the cessation of the last menstruation. In my calculations I divide the inter-

menstrual days by two, *i. e.* the clear days from cessation to beginning, and after reckoning this mid-inter-menstrual period from the date of the cessation of the last menstruation I fix the probable date of the confinement on the 260th day from this mid-inter-menstrual date.

CHAPTER X

ABORTION

BEFORE attempting to discuss the multifarious causes which may lead to and determine the premature expulsion of an impregnated ovum from its recognised habitat—the uterus—it is absolutely requisite that we should be familiar with those evolutionary changes which a healthy ovum placed under the most advantageous circumstances will display, both before and after fecundation. Unless we possess this knowledge it is impossible for us to appreciate aright the manner in which some of the causes of abortion exert their influence. The need for this knowledge is enhanced by the fact that there is hardly an action or a disease which has not been assigned as a cause of this untoward event.

Whilst investigating this abstruse phenomenon we must never lose sight of the fact that we are dealing with an organic mass which is the product of two elements, one of which is derived from the male and the other from the female parent, and that this germinal mass may be expelled from the uterus before it attains

maturity, in consequence, it may be, of some physico-chemical disturbance emanating either from the sperm or the germ element.

From the first moment of its existence every impregnated ovum bears within itself a principle of death, as well as a principle of life. It frequently happens, however, that an ovum which is not perfectly healthy becomes fecundated, and under such circumstances the principle of decay may assert its supremacy whilst embryonic development is still proceeding, and, death of the foetus resulting, abortion consequently ensues. What is true of the ovum is also true of the spermatozoon, for in order that the process of ontogenetic differentiation may be completed not only must the segmentation nucleus contain a certain amount of germ-plasm but its quality must be of a certain standard. If the quantity is too rapidly exhausted or the quality is unequal to the demand made upon it embryonic development may cease, and thereafter the immature product of conception will sooner or later be expelled from its incubator.

In the case of some Lepidoptera which reproduce by parthenogenesis it is observed that all the eggs laid by an unfertilised female do not develop, some perish. Now if the eggs which have perished are examined it is remarked that in many the process of evolution has been arrested at very different stages; the impulse to

development was imparted, but the power to complete it had been withheld. Revelations of this character teach us that the growth of nuclear substance, which is not unlimited and uncontrolled, is regulated by physico-chemical influences of an extrinsic as well as an intrinsic nature, and that although segmentation has been started it does not follow that it shall go on to completion.

It is now universally admitted that in the human female the ovary is the seat of origin of those cells which are destined to participate in the perpetuation of the race. In their earliest state these cells are simple; each is composed of a transparent mass of protoplasm, containing a very large nucleus and a nucleolus. To the nucleus and nucleolus respectively, the terms germinal vesicle and germinal spot have been applied. From time to time much discussion has arisen regarding the order and manner in which these components of the egg make their appearance. Some with Baer and Purkinje believe that the germinal vesicle is the first to make its appearance, whilst others again affirm that this priority belongs to the germinal spot. However this may be, it is generally allowed that the protoplasm, or vitellus, accumulates round the germinal vesicle, and that the vitelline membrane results simply from a coagulation of this material.

As a rule all germinal cells do not become ova; the majority in fact subserve the few which attain this distinction. The ovum, like every other structure of the body, grows and is nourished, but it is noteworthy that the materials which feed it are chiefly derived directly or indirectly from those cells which do not become ova. In some cases, as in *Sepia*, these cells are actually devoured by the ovum; generally speaking, however, they form a special layer around this structure, and these so-called follicle cells nourish the ovum by elaborating material from the nutrient fluid. At first the protoplasmic body of the ovum is small, compared with the nucleus or germinal vesicle; gradually, however, it increases in size as the ovum becomes more and more mature.

When the egg has completed its development in the ovary, it is set free by a mechanism which varies according to the species that one observes. In birds, reptiles, fishes, and the vertebrates generally, the egg by a simple increase in its size, bursts its confining capsule and thus escapes from the Graafian vesicle, whereas in mammals the ovum, never attaining a size sufficient to produce this result, makes its escape through the agency of an exudation of serous or bloody fluid, which is poured out into the Graafian vesicle itself. If this secretion does not take place or is defective in amount,

the ovum cannot escape, and sterility is a necessary consequence. In the human female, and in animals, eggs exist prior to conception, and are even expelled from the body without being fecundated. It is therefore evident that an ovum when it reaches maturity may escape naturally from the ovary, and independently of any influence on the part of the male. It is quite possible, however, that the secretion, which causes the Graafian vesicle to rupture, may be poured out during sexual intercourse, or may gradually accumulate as the ovum reaches maturity.

We are not yet in a position to dogmatise regarding the time at which the ovum, in the case of the human female, escapes naturally or spontaneously from the ovary. I am strongly of opinion, however, that as rupture results from an extravasation of blood, or serum, into the Graafian follicle, it is highly probable that this intra-vesicular tension is a phenomenon which is correlated with the appearance and re-appearance of menstruation, and that dehiscence of the ovum takes place just as the menstrual discharge makes its appearance—during the period of greatest tension in the whole genital tract.

When the ovum escapes, the breach in the continuity is rapidly repaired by cicatrisation. In consequence of the formation of these cicatrices the process of ovulation may eventually

be hindered. For this reason towards the end of the child-bearing epoch menstruation may continue to recur regularly for months or even years after the cessation of ovulation.

The ripe ovum, according to Fol, possesses when detached from the ovary, a granular vitellus, and is enveloped in a mucilaginous coat—the zona radiata. Independently of fecundation, the following changes, it appears, may now take place in the ovum. A spindle is formed which approaches a small prominence on the surface of the egg. Out of this spindle is formed the so-called polar bodies or cells, whilst from the portion of the spindle which remains in the egg are formed two or three clear vesicles, but these rapidly unite and form a single nucleus. This nucleus, which is evidently derived from the original germinal vesicle, is called the female pronucleus. After the formation of this pronucleus, the egg is in a fit condition to receive and respond to the influence of the sperm element.

If a spermatozoon now approaches an egg in this state of development, it is observed that a small bulging of the protoplasm of the egg takes place, at a spot pointing to the nearest spermatozoon. This prominence, which grows until the germ and the sperm elements coalesce, is only developed when these two products have an affinity for each other.

One spermatozoon only is necessary for the fecundation of an ovum; if two or more are by some unusual occurrence included, then a monster or some other pathological product is likely to be evolved. Under ordinary circumstances, once contact is established between a spermatozoon and the cone of attraction, the ovum is thereafter incapable of being influenced by other spermatozoa and nuclear division rapidly ensues.

When the impregnated ovum arrives in the uterus it becomes attached to the walls of this organ by peculiar processes or villi, which grow out from the egg, and fit into the folds of the uterine epithelium. At first these villi are non-vascular, and they remain so until about the third week of embryonic development. During these days the villi absorb nutrient fluid and in this manner the embryo is nourished. Towards the end of the third week the allantois rapidly develops and thrusts its blood-vessels into the chorionic villi, so that at this period the ovum is practically covered by placenta. After the sixth or eighth week, however, those villi which are not destined to participate in the formation of the true placenta, atrophy, and finally disappear.

Possessing a knowledge of the early evolutionary changes which follow upon impregnation, we are in a position to discuss more satisfactorily the subject of abortion.

A woman, it must be borne in mind, does not become pregnant because she has ceased to menstruate, but menstruation is suspended because impregnation has occurred. The idea of the probable existence of pregnancy is seldom entertained until a "period" is missed. It is very probable, therefore, that during the early days of gestation a fecundated ovum may be expelled without the patient's knowledge, and without the patient even having suspected that she had conceived. At any stage the process of evolution may be arrested, and the cause in many cases is obscure. Once the spermatozoon has left the body of the male, it is no longer affected by those vicissitudes to which the body of its parent may chance to be exposed. The woman, on the other hand, has not only to contribute her moiety, but she must harbour and nourish in her body for a more or less fixed period of time the segmenting mass. During this sojourn the product of conception is liable to be affected by disturbances which may exert their influence on the body of the mother. The nucleoplasm may be sufficiently endowed to complete its evolutionary changes, but, at any moment, these may be arrested in consequence of some physico-chemical disturbance which may either have existed before or have originated after impregnation, and for which the mother is solely responsible.

When men or women have been exposed for a greater or less length of time to the influence of certain toxic agents, the vigour of the reproductive elements, begotten by these individuals, is apt to be impaired. For this reason a fecundated ovum, generated or impregnated by an individual whose constitution has been thus acted upon, will most probably fail to complete its embryonic development, and abortion is then a necessary sequence. Women or the wives of men who are employed in lead factories, who are exposed to the fumes of bi-sulphide of carbon at india-rubber works, or who inhale the fine dust of quinine, are, when they become pregnant, exceedingly prone to abort.

Syphilis is a poison whose action in the production of abortion is, I believe, much over-rated.

Whatever brings about the death of the ovum is necessarily a cause of abortion. It frequently happens, however, that it is impossible to say whether the pathological change or changes detected in an abortive product of conception are the cause, or merely correlatives of intra-uterine death. In the case of hydatid mole, for example, the change which takes place in the chorionic villi may arrest embryonic development, but it may also be a manifestation of an impregnated ovum which was previously extensively diseased.

Hydatid mole

This pathological product is developed from the chorionic villi, and I believe that the increased formation of mucous tissue which constitutes this mole begins whilst the villi are still non-vascular.

It may be produced by a woman who hitherto has given birth to healthy children, and who previously may never have miscarried. It may occur in the same woman more than once, and sometimes even as the result of several consecutive impregnations.

There is usually a history of amenorrhœa for about three months, after which a more or less marked hæmorrhagic discharge makes its appearance, and continues to flow until the uterus rids itself of the pathological product.

The size of the uterus may correspond fairly well with that of the supposed duration of the pregnancy, or it may be slightly larger. The breasts, as a rule, are not characteristic of pregnancy. On auscultating the tumour no uterine souffle nor foetal heart can be detected.

On vaginal examination it sometimes happens that portions of the mole are found hanging through the cervix.

The diagnosis of this condition is usually a difficult matter.

Necrosis of the Amnion

At a very early period of pregnancy, as early even as the twentieth day after conception, fluid is found in the sac of the amnion. By a process of endosmosis it is passed by the chorionic villi from the nutrient fluids of the mother to the location in which it is found. We are ignorant of its function, but it is highly probable that it serves some useful purpose.

Occasionally in consequence of some structural variation in the state of the amnion this membrane becomes more or less extensively corroded, and consequently the contained fluid may escape. If the breach in the continuity of this sac is so located that the fluid drains away to such an extent that the embryo does not receive that amount of protection which is so essential apparently for its well being, then death results, and sooner or later abortion follows upon this event.

Hydramnios

The amount and character of the fluid contained in the amnion varies. Sometimes toxic alkaloids can be detected in the fluid, and it is quite possible that these may influence prejudicially the embryo, and even cause its death. Occasionally the fluid accumulates to an excessive extent, and constitutes what is known as

hydramnios. It is more frequently noted in association with twins, and apparently it may be induced by mental and physical shock.

Disease of the Decidua

This may occasionally be a cause of abortion.

The causes of hæmorrhage during pregnancy, and the influence of such in producing abortion.

The placenta begins to form about the tenth week of pregnancy, and from this period until the completion of embryonic development, the foetus is, through the medium of this structure, nourished by the mother. Whatever, therefore, impairs markedly the function of the placenta may bring about the death of the foetus, and must be considered a cause of abortion.

According to Turner, the uterine vessels which enter into the formation of the maternal portion of the placenta lose their capillary form, and become expanded into large freely communicating sinuses. In these sinuses the foetal villi hang, and here and there only are these structures actually attached to the walls of the sinuses by means of trabeculæ, which pass from the serotina to the foetal villi. In the foetal villi the vessels retain their capillary form.

The chorionic villi remain non-vascular until about the end of the third week of embryonic growth. During this period very little change has as yet taken place in the uterus and it is

hardly possible, under any circumstances, for hæmorrhage to take place at this early stage. After the twentieth day the allantois thrusts its blood-vessels into the chorionic villi, and soon thereafter these structures increase in size and fit into crypts or depressions which now make their appearance in the walls of the uterus. The walls of these crypts rapidly become very vascular. After the third or fourth week of pregnancy hæmorrhage may be observed, if for any reason the coadaptation which ought to exist between the foetal and maternal structures is enfeebled. The integrity of the vascular crypts is maintained through the agency of the chorionic villi. If the uterine sinuses do not receive that amount of support from the villi which is requisite for their well being, rupture of the sinus-wall readily takes place, and hæmorrhage is a necessary sequence. An atonic state of the uterus during pregnancy tends to produce hæmorrhage in this manner. Under such circumstances this organ does not oppose efficiently the penetration of the foetal processes, and cohesion is for a greater or less length of time very imperfect. In cases of this description the hæmorrhage will, as a rule, make its appearance during or soon after the fifth week of pregnancy, and occurring at this early period it readily escapes externally. Whether abortion will or will not ensue will depend upon the extent to

which the placental structure is thus implicated.

In another group of cases hæmorrhage may take place into the substance of the placenta after this structure has been well formed. Under such circumstances the blood may eventually escape externally or it may be prevented from doing so. It is evident that the effect of such an accident will vary according to the amount of disturbance, immediate and remote, produced by the extravasated blood. Small hæmorrhages apparently often happen without producing any untoward result. If a large quantity of blood is poured out it may almost immediately excite uterine contraction, and induce abortion. If the destruction of placental tissue is great, the embryo may die, and abortion will then sooner or later ensue. Or, again, death of the embryo may be caused by the organisation of the effused blood, and the impairment in the function of the placenta resulting therefrom. I can offer no suggestion regarding the probable cause of hæmorrhage into the substance of the placenta.

Death of the foetus, and consequently abortion, may be due to an *infectious* disease communicated to the foetus by the mother.

Fibro-myomatous growths in the uterus may cause abortion.

These growths may produce this result by

interfering with the implantation of the chorionic villi, or by crippling the expanding uterus. If the neoplasm interferes with the evolution of the placenta abortion will be preceded by more or less hæmorrhage, whereas when the growth interrupts the evolutionary changes going on in the uterus, pain will, as a rule, be the premonitory symptom. It must, however, be remembered that these tumours are not necessarily a cause of abortion.

Pelvic adhesions may so bind down the uterus that it cannot enlarge sufficiently or rapidly enough for the developing ovum, and abortion consequently ensues. It sometimes happens, however, that these adhesions soften correlatively with the uterus and allow of the foetus being retained until it is fit for an external existence.

Over-indulgence in sexual intercourse during pregnancy is a doubtful cause of abortion.

Any sudden *emotion*, such as intense grief, a shock, or a fright, will determine the premature expulsion of the product of conception. Some days even may elapse after the emotional impression before there is any evidence of the pregnant uterus having been *disturbed*.

Climate and locality increases in some women the tendency to abort.

In cases of abortion the force of *habit* is especially strong.

Some women abort with great readiness, others with much difficulty.

Treatment directed towards the Prevention of Abortion.—If there is hæmorrhage, and this is evidently due to want of tone, administer small doses of liquid extract of ergot and perchloride of iron frequently. If the tone of the uterus is good and hæmorrhage is the important indication, gallic acid, or sulphuric acid with or without opium may be administered. In some cases one of the salts of potash may be advantageously used. If the uterus is abnormally excitable some of the bromide salts or even morphia may be tried. If syphilis is suspected give iodide of potassium with bark. The food should be nutritious, but as far as possible non-stimulating.

CHAPTER XI

EXTRA-UTERINE PREGNANCY

THIS consists in the development and growth of an impregnated ovum outside of the uterus. In its abnormal situation it may during its evolution endanger the life of the mother, or it may become fully mature, then die, and place the life of its harbourer in jeopardy.

Before discussing the diagnosis and treatment of extra-uterine gestation, I shall detail two of the cases which have come under my observation, because the histories are totally different, and yet the growth and development of the foetus was completed in each case.

CASE 1.—*Nothing unusual was noted during the development and completion of the growth of the foetus.*

Hannah M—, æt. 33, and married nine years, has had five children and one miscarry. The last child was born on the 2nd of May, 1888, and was suckled for two years. The menstrual discharge reappeared after this confinement, when the child was fifteen months old, and it thereafter recurred regularly until three months after

weaning. No menstrual discharge appeared in July, 1890, nor was there again any semblance of menstruation until April, 1891, when the hæmorrhagic discharge reappeared, and continued more or less for eight weeks. She had considered herself pregnant, and had expected to be confined in March. She never experienced anything like labour pain at any time.

She presented herself at the Hospital for Women on October 1st, 1891, because of the size of the abdomen. I diagnosed extra-uterine pregnancy, and admitted her for operation. On the 9th of October I opened the abdomen, delivered a full-time foetus in a perfect state of preservation, removed the placenta, which was easily separated, and stitched the sac to the abdominal wall. The patient made an excellent recovery.

CASE 2.—*Metrorrhagia after the sixth week of pregnancy for eleven weeks.*

Clara M—, æt. 37, and married sixteen years; has had five children. The last child was born nearly twelve years ago. She presented herself at the Hospital for Women on April 9th, 1890, and was admitted there and then. The history given was that she had been in St Bartholomew's for a few weeks about the 9th of May, 1889. For five weeks prior to her admission into St Bartholomew's she had had a constant discharge of blood *per vaginam*, and previously to this she

had not been "unwell" for six weeks, *i. e.* she had missed one period. After leaving St Bartholomew's, on May 30th, 1889, patient had no hæmorrhagic discharge again until Christmas, when it reappeared and continued until February 7th, 1890. In April, soon after her admission into the Hospital for Women, the abdomen was opened, and a full-time foetus, in a perfect state of preservation, was removed—the placenta was removed at the same time—and the patient made a good recovery.

Symptoms.—It is evident from these and other cases of ectopic pregnancy which have come under my observation that the symptoms of this phenomenon are very vague. No one who has had a large experience in gynæcological work would hazard the opinion that because a patient had a pelvic tumour, and had missed a "period" she must be the subject of an ectopic pregnancy. Extra-uterine pregnancy is, I firmly believe, too frequently diagnosed. In many of these cases no ovum is found, and probably it is too early to expect a placenta. It is easy, of course, to say they escaped detection, or had already disappeared; but the question is, were they ever present! In many cases the diagnosis of ectopic pregnancy is substantiated by no fact, and the scientific mind cannot be appeased except by such.

The majority of writers on extra-uterine preg-

nancy draw attention to the fact that many of the women who become the subjects of this disorder have either previously been sterile or have not been pregnant for many years. It is extremely doubtful whether much importance should be attached to this statement, for it must be remembered that too commonly in this century measures are adopted for the prevention of conception, and these measures may play a very important part in the production of extra-uterine gestation.

Some authorities deny the possibility of ovarian pregnancy. I have, however, seen one case which appeared to be of this kind. The patient was admitted by me into the Hospital for Women, and after the foetus was removed the sac in which it had lain was severed from the body of the mother in the same manner as an ordinary ovarian cyst, the pedicle having previously been transfixed and ligatured. The tumour had originated in the left side of the pelvis; the Fallopian tube was entire on this side, but the left ovary could not be found. The patient recovered.

The most frequent location for the development and growth of the impregnated ovum is the Fallopian tube. As the tube becomes more and more distended and infiltrated by the chorionic villi rupture is apt to take place, either into the peritoneum or into the substance of the broad

ligament. This accident usually happens before the twelfth week, and produces either an intra-peritoneal or an extra-peritoneal hæmatocele. The former may prove rapidly fatal, whilst the latter, although less dangerous, may end in abscess formation, and produce a long and tedious illness, and even cause death by exhaustion. Occasionally the blood poured out into the broad ligament becomes absorbed, and the foetus may or may not remain quiescent. The foetus may gradually be absorbed; it may form a lithopœdion, or be discharged piecemeal through the abdominal wall, the bowel, the bladder, or the vagina.

It is not yet definitely settled what changes may take place in an ovum which has not been fecundated, and until we possess more definite information on this point, it is impossible to settle whether fecundation takes place, as a rule, in the Fallopian tube or in the uterus. My own observations on this question have so far led me to believe that we shall eventually be enabled to prove that the ovum and the spermatozoon usually meet and coalesce in the Fallopian tube.

Regarding the influence of the so-called desquamative salpingitis as a cause of ectopic pregnancy, I fear it is more imaginary than real.

The diagnosis of extra-uterine pregnancy is

extremely difficult and in a very early stage is impossible. By a process of exclusion we may suspect the existence of this phenomenon. The diagnosis must not be based upon the fact that one or more periods have been missed, for every pelvic tumour associated with a history of amenorrhœa and subsequent menorrhagia or metrorrhagia, is not necessarily an ectopic pregnancy.

Treatment.—If rupture has occurred the treatment to be adopted will be same as is recommended in pelvic hæmatocele. Unless the foetus has evidently been dead some time no attempt should be made to separate the placenta at the time of operation; the sac under such circumstances should be washed and closed, the cord having previously been cut short. In the majority of the cases so treated the placenta will gradually disappear; should it, however, eventually give rise to trouble by suppurating the sac could be re-opened, and the disintegrating placenta could then be easily separated.

CHAPTER XII

HYDROCELE, COCCYGDYNIA, ALOPECIA

Hydrocele of the Round Ligament

THIS, which is not such a rare condition as is usually supposed, consists in an accumulation of fluid around the round ligament.

The round ligament comes from the upper part of the uterus and passes out in the structure of the broad ligament to gain the internal inguinal ring. It passes through the inguinal canal towards the symphysis, where its fibres expand in the substance of the mons.

Hydrocele of the round ligament is characterised by a more or less elongated and cystic swelling issuing from the inguinal canal and directed towards the symphysis.

Diagnosis.—This tumour has to be differentiated from hernia.

Treatment.—The fluid may be evacuated by a fine trocar and cannula.

Coccygodynia

This is a chronic disorder produced in many

cases during parturition, but in a few rare cases independently of this phenomenon.

It comprises morbid conditions which have not been ascertained. By some it is considered to be an ordinary neuralgia.

It is characterised by pain referred to the end of the spine. This pain is complained of more especially when sitting, on rising from the sitting position, or when lying on the back. During defæcation the pain is sometimes most distressing. Pressing the tip of the coccyx produces the pain complained of.

Treatment.—The usual nervine tonics and sedatives should be tried. Blisters and galvanism will occasionally prove beneficial. If all these means fail and the condition demands operative interference, the muscles attached to the coccyx may be severed subcutaneously, or after the plan of Dr Nott the coccyx may be extirpated.

Alopecia of the External Genitals

This consists in the more or less complete removal of the hairs about the external genitals.

In the few cases which I have seen the hair of the scalp and arm-pits has also been removed.

This disease is evidently dependent upon some nerve disturbance, whereby the nutrition of the hair bulbs is affected.

Treatment.—Phosphorus and strychnia may be administered internally. Local applications are worthless, although it is usual to try some stimulating lotion.

CHAPTER XIII

RUPTURE OF THE PERINEUM

As a rule the perineum is more or less torn at the first confinement. In the majority of cases it is slight and calls for no attention, whilst in others it may extend to and involve the sphincter ani.

If detected immediately the labour is completed one or more stitches, according to the extent of the laceration, should be inserted so as to bring the raw surfaces together. Silkworm gut is the best material for sutures, and the ordinary needle on handle will prove the most easy of manipulation. Union, of course, may not occur.

If no attempt has been made to obtain union, or failure having resulted therefrom, it may be necessary, and this more especially when the sphincter ani has been more or less extensively torn, to perform the operation of perineorrhaphy to lessen the discomfort and misery of the patient. In consequence of fibres of the sphincter ani having been lacerated, the woman may have little or no control over the lower bowel, so that flatus or fæcal matter may pass without the

patient being able to prevent this untoward occurrence.

This operation may be called for, too, in some cases of prolapsus uteri.

Perineorrhaphy

This operation aims at the production of a raw surface corresponding with the evident seat of laceration on both sides and throughout its extent. This may be accomplished either by denuding and removing, or by denuding and utilising. In the former case the surface is pared, in the latter a process of splitting is resorted to. The splitting operation is the preferable, for should the procedure fail—no tissue having been removed—the condition of affairs is hardly made worse. To Lawson Tait we are indebted for this so-called flap operation.

The patient is placed in the lithotomy position and maintained there throughout the operation by two assistants. By means of sharp-pointed elbow scissors the vagino-rectal septum is split, so that a surface corresponding as nearly as possible with the evident seat of laceration is laid bare. The point of the scissors is inserted on the left side (patient's left) at a spot corresponding as closely as possible with the posterior limit of the tear, and thus the vagino-rectal septum is split, the point of the scissors coming out on the right side (patient's right) at a point

immediately opposite that entered on the left. The point of the scissors is again entered at the original spot on the patient's left side, and an incision forwards for about an inch is made; the direction of this incision should be slightly outwards as well as forwards, as its anterior limit is of course intended to form the posterior limit of the vaginal orifice. A similar incision is made on the patient's right side, the scissors being inserted at the original seat of exit in splitting the vagino-rectal septum. The vagino-rectal flap thus produced is introverted towards the vagina, the left and right posterior free corners being drawn forwards and held in this position by pressure forceps, whilst the sutures are inserted so as to bring the raw surfaces in apposition in a manner similar to that adopted when suturing is resorted to immediately after the confinement. The sutures should include the skin, and as far as possible they should not be allowed to make their appearance on the raw surface. Tait does not pass his sutures through the skin, and the sutures appear in the centre of the raw surface.

After-treatment.—This will depend greatly upon the nursing. If the nurse has been well trained the lower bowel as well as the vagina may be washed out daily; if not, then the less the wound is disturbed the better. The perineum should be kept clean and dry.

CHAPTER XIV

DYSPAREUNIA

THIS consists usually in some disturbance of the genital organs in consequence of which pain more or less severe is experienced, either during sexual intercourse or whenever coition is attempted.

In some cases cohabitation can be consummated, although the woman may dread the act, but in many intromission is impossible.

It may develop at any time during married life, but generally it is complained of from the earliest period after marriage. Whether congress is effected or not the nervous system is apt sooner or later to become disturbed, and this in itself is a very important element.

The hymen may never even have been ruptured.

Causes.—Sometimes the condition is apparently a mental phenomenon, at least no local cause is discoverable.

An irritable state of the remnants of the hymen.

Vascular growth of the urethra.

Fissure and ulcer of the rectum.

Vascular punctata about the external genitals towards the climacteric.

Vulvitis and vaginitis.

Malignant disease of the vagina.

Prolapsed ovaries.

A retroverted tender uterus?

Treatment.—If intromission has never been effected the hymen must be ruptured and the vaginal orifice dilated. Thereafter dilatation should be practised by means of glass dilators. An ointment containing cocaine may be used for smearing the dilator.

When the remnants of the hymen are irritable they should be removed by scissors, and dilatation practised as in a case in which the hymen has never been ruptured. A vaginal douche containing one drachm of *Liquor Opii Sedativ.* to the pint of water should also be recommended night and morning.

In fissure and ulcer of the rectum, if operative interference is not necessary, a suppository for the rectum containing ten grains of oxychloride of bismuth and half or one grain of opium may be employed.

In all cases constipation should be avoided.

For retroverted tender uterus, hot douche.

During treatment the patient should live apart from her husband.

CHAPTER XV

DISORDERS OF THE EXTERNAL GENITALS

Pruritus Vulvæ

THIS consists in some molecular or chemical disturbance of the terminations of the nerves which supply the external genitals.

It is characterised by intense itching, which invariably compels the sufferer to practise friction for its relief, a procedure which, however, only aggravates the disorder, and tends to produce excoriation of the parts.

In a mild form it is often experienced just before, but more especially immediately after, menstruation.

It is a common association of—

Diabetes.

Pregnancy.

Gonorrhœal and other discharges.

Pediculi pubis.

Threadworms?

In many of the severe cases the cause cannot be determined.

Diabetes.—When this disease develops in the

female about the climacteric, pruritus may be practically its only symptom. There may be no thirst, no special frequency of micturition, no alteration in the appetite, and the majority of the patients are well nourished. When pruritus appears between the ages of forty-three and fifty-three the urine should be examined for sugar.

Pregnancy.—When pruritus occurs during pregnancy it is occasionally the precursor of abortion.

Treatment.—In diabetic cases codeina should be administered in $\frac{1}{3}$ grain doses three times a day, and a vaginal injection used of Liquor Opii Sedativ., 1 drachm to the pint, of carbolic acid 1 in 80 or 100, of camphor water with or without Acid. Hydrocyan. dil., or of acetate of lead with acetate of morphia.

During pregnancy a mixture containing carbonate of bismuth and Potas. Bicarb., or a 15 or 20 grain dose of bromide at night may be administered, and a vaginal injection of Liquor Opii Sedativ., 1 drachm to the pint, should be tried, or, failing this, carbolic acid 1 in 100.

If the pruritus is associated with gonorrhœa the injection of Liquor Opii Sedativ. should be tried, but it should be preceded by an injection of plain lukewarm water, so as to wash the vaginal canal as thoroughly as possible before using the medicated injection. If necessary, 10

or 20 grains of zinc sulphate may be added to the injection containing liquid opium.

Cocaine ointment (1 in 30) aggravates rather than relieves the discomfort.

Vulvitis

This consists in inflammation of the mucous membrane entering into the formation of the vulva.

It is characterised by the presence of a purulent discharge, by soreness or pain, and irritation about the external genitals, and frequently by pain in passing water.

It may attack very young children. In this case the disease is usually confined to the mucous membrane of the vulva, and seldom, if ever extends to that of the vagina. The existence of a purulent discharge about the genitals of a child arouses invariably the suspicion of the mother regarding the question of indecent assault. It would, of course, be impossible for penetration by an adult male to occur without producing more or less extensive laceration. Besides, in the majority of cases there is no evidence of the disease being of an acute character.

This disorder is frequently observed in unmarried women who have evidently never indulged in sexual intercourse. In this case, as in that of young children, the disease invariably

develops in an insidious manner and never appears to be acute in its origin.

It is commonly caused by gonorrhœa and is then generally associated with vaginitis. When produced by infection the labia are often œdematous.

On examination the parts are more or less red and irritable looking, and frequently excoriations are observed which have been produced by friction. The friction may or may not have been practised simply to relieve the distressing irritation which is so commonly associated with vulvitis.

Treatment.—In the case of young children strict cleanliness should be observed. The parts should be separated and a stream of weak carbolic water, falling from a saturated sponge say, should be allowed to flow over the vulva. If this fails, then some astringent as sulphate of zinc or acetate of lead should be added to water, which may then be allowed to play on the vulva from a sponge.

In married and unmarried women it is always advisable to use a vaginal injection, and the best is probably one drachm of *Liquor Opii Sedativ.* in a pint of water, to which if the case is obstinate sulphate of zinc or acetate of lead may be added. If the disease is gonorrhœal the vagina should be well washed with warm water before using any medicated douche. In the

acute stage a douche containing opium alone will prove grateful to the patient. After the more acute symptoms subside tr. of iodine or zinc or lead may be used with or without the liquid opium.

Lupus

This tubercular disease rarely attacks the external genitals, but when it does it presents the same appearances as when it attacks the face. It frequently ulcerates.

Treatment.—Attend to the general condition of the patient, giving cod-liver oil, arsenic, and iron. The new formation may be scraped by a sharp spoon and the base scarified lightly from time to time.

Warts

These excrescences consist in collections of hypertrophied papillæ covered with epithelium.

They are found on the skin and mucous membrane.

They are produced by the irritation of a discharge which is probably invariably of a gonorrhœal character.

Treatment.—When there is an extensive crop they should be removed by the scissors and the parts should afterwards be kept clean and dry. If only a few exist a vaginal douche of Condyl should be ordered, and after using this, the ex-

ternal genitals should be bathed with Lotio Nigra. The parts should then be well dried and dusted with a powder composed of equal parts of calomel and powdered starch.

Simple Elongations of the Labia Minora

In this country elongation of the labia minora is often observed. One only or both may be much longer than usual.

The nymphæ of the Waganda women reach frequently to as low as the knee, and constitute what is termed the Hottentot apron.

Even in the case of black women it is usually believed that they are artificially elongated. Moist heat may of course increase their growth.

In Central Africa the labia minora are half an inch long at the age of eight, and four inches at the age of twenty.

To prevent the accumulation of a white and fetid secretion amputation of the nymphæ may be called for in this country as well as in the case of negro women.

Fibroma of the Labia Minora

Fibroma of the nymphæ are not common; when, however, they do occur they are readily recognised. Exposed as they are to friction they tend to ulcerate, and this alone causes the patient as a rule to seek advice.

Fibroma of Labia Majora

Pedunculated fibroma of the labia majora are occasionally observed. They are of slow growth, and unless they ulcerate it is seldom that the patient seeks advice regarding such a tumour.

Lipoma of Labia Majora

Fatty tumours of the labia majora are occasionally observed, and discomfort may result from their size. I have seen a fibro-lipoma growing from the left labium majus which reached to the knee, and which when removed weighed $7\frac{1}{2}$ pounds.

Cyst of Labium

Labial cysts of various sizes are frequently observed. They are produced by an accumulation of fluid in the duct of the vulvo-vaginal gland, the orifice of the duct having previously become occluded. They may exist for years without producing any special discomfort.

Treatment.—If necessary a small piece should be cut out of the cyst wall and its thin covering, and the interior of the cyst should be rubbed with solid nitrate of silver.

Abscess of the Labium

A labial cyst may inflame and suppurate. The vulvo-vaginal gland and its duct may,

however, inflame and suppurate in association with gonorrhœa. When suppuration occurs the swelling is, as a rule, more or less red and painful.

Treatment.—Poultice freely, and, if necessary, lay open.

Hypertrophy of the Labia

In consequence of inflammation, especially when this has been of a virulent character, the tissues of the labia may be so indurated and enlarged that it may become necessary to remove these structures. Free hæmorrhage is likely to be encountered, and precautions should be adopted to prevent this proving troublesome. The mass may be removed by the thermo-cautery or by the galvanic écraseur.

Varicocele of the External Genitals

Sometimes the veins of the labia and about the mons become so enormously distended as to produce great discomfort, and more or less constantly, aching pain.

On inspection the condition of affairs is readily detected. It is usually observed in women who have borne children, and the veins become greatly enlarged during sexual intercourse, menstruation, and pregnancy.

These, like varicose veins elsewhere, may of

course rupture at any time, but more especially during parturition.

Epithelioma of the External Genitals

Comparatively speaking, epithelial growths are rarely observed about the external genitals; when, however, they do exist they are usually found on the labia or in the neighbourhood of the clitoris. In this location the disease is essentially one of advanced life, as growths of this character are seldom noted before the age of sixty. The infiltration takes place as a rule very slowly, and produces little or no discomfort until the growth has been in existence a year or more. Taken at first for a pimple, the patient seldom seeks advice until the new growth has greatly increased in size or ulceration has occurred.

Treatment.—When operative interference is feasible free excision of the growth should be recommended.

Vascular Growth of the Urethra—Urethral Caruncle

Towards the orifice of the urethra, and occasionally extending for some distance up the canal, are found small vascular-looking tumours. Sometimes they are pedunculated, but usually they are sessile. They vary in size from a pin-

point to a split pea, rarely bigger. One tumour only may exist; usually there are several.

They consist of hypertrophied papillæ, and possibly the remains of urethral glands. They are extremely vascular, and are readily torn. They contain many nerve filaments.

They are characterised by pain on connection, or by reason of contact with the clothing, frequent desire to pass water, pain or a scalding sensation during micturition, and occasionally by the presence of blood after passing urine or after coition.

They are sometimes extremely sensitive.

They may develop at any time in life; commonly, however, they appear as the sexual functions are waning.

Treatment.—They should be removed freely by scissors and the surface cauterised afterwards by means of Paquelin's cautery.

It is not necessary to draw off the urine after operation.

Prolapse of the Mucous Membrane of the Urethra

This condition is occasionally observed and is apt to be mistaken for vascular growth of the urethra. It is simply an extroversion of the mucous membrane of the urethral canal. It is met with in women who have borne children and usually after the menopause.

The resulting symptoms are similar to those of urethral caruncle, viz., pain in passing water and pruritus.

Treatment.—Remove by scissors and cauterise the denuded surface.

CHAPTER XVI

DISORDERS OF THE VAGINA

Atresia of the Vagina (acquired)

ATRESIA of the vagina may result from extensive sloughing either after labour or in consequence of direct injury.

I have seen one such case in which the vaginal canal was so constricted that an ordinary surgical probe could with difficulty be introduced as far as the uterus. This patient became pregnant and the fistulous tract to the uterus had to be enlarged by incision and dilatation and the uterus emptied—fortunately she came under observation before she had missed a second period.

Vaginitis

This consists in an acute or chronic inflammation of the mucous membrane entering into the formation of the vaginal canal.

It may be simple or gonorrhœal in character.

The simple variety includes all those in which the disease appears to have resulted from some other cause than contagion.

Except in those cases in which the onset of the disease and its clinical history is very evident, it is practically impossible to differentiate a case of simple from one of gonorrhœal vaginitis. It is more than probable, however, that in the majority of cases of acute vaginitis the disease has been produced by contagion. The disease may be communicated by a male in whom the acute signs of the disorder have long since subsided, and who for some time has noticed a slight gleet discharge only.

Symptoms.—In cases of simple vaginitis the disease is usually of a chronic character, and discharge is not only the sole symptom, but constitutes the disease.

Acute gonorrhœal vaginitis which is invariably associated with vulvitis is characterised, as a rule, by irritation of the external genitals, pain and blood on passing water, and the presence of a purulent discharge. Frequently there is œdema of the labia. The irritation may produce disturbance in the inguinal glands, and these as well as the vulvo-vaginal glands may inflame and suppurate. When either of these glands inflame and end in abscess formation the patient's discomfort is greatly increased.

The chronic variety of vaginitis, whether simple or gonorrhœal, is characterised solely by the presence of discharge, which may or may not produce more or less excoriation.

Treatment.—Except when the symptoms indicate that the disease is evidently of a gonorrhœal character, a stimulating or tonic injection should be recommended. Liquor Sodæ Chlorinata one ounce to the pint of luke-warm water or hydrochlorate of quinine half a drachm to the pint of luke-warm water may be used with advantage. The tendency is usually to employ some astringent in cases of this description; lately I have almost entirely discarded alum, sulphate of zinc and lead as medicaments for the vagina.

In acute gonorrhœal cases all local applications at first should be of a sedative character, and the best is undoubtedly that containing the liquid extract of opium one drachm or more to the pint;—before using any medicated injection, however, in cases of this class it is well to recommend the use of plain luke-warm water to wash the vagina thoroughly. Some saline aperient should be administered every morning or occasionally according to the condition of the bowel. As the acute stage subsides an injection containing liquid opium and tincture of iodine (half drachm) may be employed. Later a weak injection of Liquor Sodæ Chloratæ two drachms to the pint gradually increased may be employed. During the acute stage a small pad of absorbent gauze should be placed between the labia, and the strictest attention to cleanliness should be observed.

Diverticula of the Urethra

Occasionally small cystic tumours located in the anterior wall of the vagina are formed from diverticula of the urethra. When pressed the contents of these cysts are emptied *per urethram*.

Cysts of the Vagina

Cysts may develop in any part of the vagina, and may attain a fair size. I have seen them contain as much as three ounces of fluid. The character of the fluid may vary. When they occur they may protrude beyond the external genitals.

The patients who suffer from these tumours complain of a feeling of fulness in "the front passage," and occasionally of a burning sensation.

Treatment.—Free opening, after which the interior of the cyst may be rubbed with solid nitrate of silver or swabbed out with iodine.

Fibroma and Fibro-lipoma of the Vagina

These growths are rarely seen; they are seldom bigger than a walnut. They usually develop in the anterior wall of the vagina about an inch or so from the orifice of the urethra. The patient generally believes she is suffering from "falling of the womb."

If necessary they should be dissected out.

Malignant Disease of the Vagina
Sarcoma

As a primary disease this is occasionally met with in the vagina. It is evidently extremely prone to appear in the posterior wall and rather high up the canal.

Symptoms.—At first hæmorrhage and pain during coition are complained of; eventually an offensive discharge is noted.

It results in death in from eighteen months to three years.

Treatment.—If detected early the diseased tissue should be scraped away as thoroughly as possible.

Scirrhus and Epithelial Cancer

Scirrhus of the vagina may appear early in life, as early as twenty-six. The canal gradually becomes more and more contracted by this variety of growth and eventually it becomes occluded altogether. It appears to attack the whole vaginal canal, and is virtually a cancerous degeneration of this passage.

Symptoms.—Hæmorrhage is an occasional symptom. The common associations are pain, inability for coition, and offensive discharge. During the early days there is frequent desire to pass water, but soon incontinence of urine results. Rapid emaciation takes place.

Treatment.—Relieve pain and treat generally.

Epithelioma is a disease rather of advanced life. It may exist for three or four years without producing any other manifestation than a slight discharge of blood which may be detected on the clothing. Often there is no pain until the disease is far advanced, until, in fact, the inguinal glands are affected, and these structures have begun to break down.

Urinary Fistulæ

In consequence of prolonged pressure or direct injury during parturition, or as a result of ulceration, a fistulous communication may be established between the bladder and the uterus or the bladder and the vagina whereby an involuntary flow of urine occurs, a condition of affairs which is most distressing to the patient.

If the injury is inflicted by instruments the urine may pass *per vaginam* almost immediately delivery has been effected, whereas when the accident is due to pressure the involuntary flow of urine may not be observed until three or four days after the confinement.

The bladder may be eaten into by a cancerous growth of the cervix or vagina.

To determine the situation and size of the fistulous opening it may be necessary to examine the patient in the lithotomy position, and to inject milk and water into the bladder.

Treatment.—The position of the opening in the bladder may be such that by keeping this viscus empty cicatrization may eventually close completely the opening. If it is necessary to resort to operation the edges of the fistulous opening should be pared, and closed afterwards by sutures.

CHAPTER XVII

PROLAPSE OF UTERUS, BLADDER, RECTUM, ETC.

Prolapse of the Uterus

“FALLING of the womb,” so that the uterus occupies a lower position in the pelvis than it ought to, or even protrudes beyond the external genitals, is a very common disorder.

It is impossible to enumerate the structures on the integrity of which the position of the uterus depends. The position, however, appears to us to be a strained one, and we naturally seek for an explanation. Throughout the universe there exists cohesive affinity. Every molecule of a structure is held in position by virtue of two distinct forces, one of which attracts whilst the other repels. What is true of every minutest mass is likewise true of every aggregate, of every organ and structure in the body. The molecules may be feebly or strongly bound together. The effect which a given force will produce depends upon the cohesive attraction. In the erect position the force of gravitation acts powerfully upon the vagina and the other pelvic structures. Under ordinary circumstances the forces balance

each other; if, however, the integrity of the tissues becomes disturbed physically or chemically and they are thereby enfeebled, the force of gravitation will assert its supremacy. The extent to which the structures will yield to the influence of this force will depend upon their power of resistance.

The organism is endowed with a certain power which enables it to some extent to adapt itself to circumstances. During pregnancy, or in consequence of a neoplasm, the weight of the uterus may be increased, but prolapse does not necessarily result. The abdominal cavity may be enormously distended with fluid which has been gradually effused, and yet no descent of the pelvic floor can be detected.

Prolapse of the uterus may occur at any time during the period of sexual activity. It is sometimes complained of before the establishment of menstruation, and frequently it develops after the cessation of uterine activity.

It is frequently induced by constitutional changes and local conditions dependent upon gestation and lactation. I have seen it occasionally in young unmarried women who had never borne children.

Symptoms.—These vary very much. Some women complain of little or no discomfort, even when the vagina is extroverted and the uterus protrudes beyond the external genitals. There

is usually more or less "bearing down," or a feeling of discomfort in the vagina, and frequent desire to pass water during the day, *i. e.* so long as the patient is not recumbent. A woman who suffers from prolapse is usually comfortable when lying down, because then the direction of the force of gravitation is altered. There may either be difficulty in holding or in passing urine. The patient may be unable to void the urine until she has pushed the uterus up into the vagina.

When the uterus projects beyond the external genitals locomotion is invariably impeded. From friction, on account it may be of a diaper applied to support the uterus, extensive erosions or even deep ulcers close to the os uteri may be produced, and these may bleed more or less constantly. The urine passing over these raw surfaces increases the distress.

As a rule the functional activity of the uterus continues unimpaired.

The sphincter of the vagina may or may not have lost its tone.

Diagnosis.—When the uterus protrudes externally the condition is only too evident. In moderate cases there may be merely a laxness of the vaginal walls.

Treatment.—In mild cases of prolapse I am adverse to the use of mechanical supports, such as a Hodge or a ring pessary. The discomfort

is undoubtedly relieved by the introduction of such, but it is questionable whether in the long run it is a wise procedure. My opinion is that before resorting to these appliances an attempt, well directed, should be made to restore the tone of the enfeebled structures. General tonics, according to the peculiar requirements of the case, should be administered. Constipation should be avoided, and this will be best prevented by a tonic pill containing the following ingredients:—Sulphate of iron, Ext. Nuc. Vomic., Ext. Belladon., and Pil. Rhei Co., and given daily after the mid-day meal. Locally, the following may be used with advantage:—Liquor Sodæ Chlorinatæ, 1 ounce in a pint of lukewarm water as a vaginal injection every night or night and morning; Quininæ Hydrochloras, 30 grains in a pint of lukewarm water as an injection. The following vaginal suppository may be employed, but before inserting such the patient should use a vaginal douche of plain lukewarm water—

R. Quin. Hydrochlor.	. gr. iv;
Digitalin gr. $\frac{1}{10}$;
Strychniæ gr. $\frac{1}{30}$;

The suppository to be made of glycerine jelly.

In many cases, especially when the prolapse has existed for years or when the woman is obliged to undertake laborious work, we are compelled to have resort to some mechanical

appliance. If the vaginal orifice is not too patent the ordinary watch spring pessary will, as a rule, answer. When the vaginal orifice is wide we may contract it by performing an operation similar to that done to restore a perinæum which has been more or less extensively ruptured. After such an operation the watch spring pessary may fulfil its purpose. If, however, the orifice of the vagina is so patent that the ring pessary cannot be retained, a Zwanck or a cup-and-stem pessary must be employed. The Zwanck, like the cup-and-stem, should be supported by bands from the waist. The latter instruments should both be removed by the patient at night, and re-introduced every morning.

As the vaginal tissues in severe cases of prolapse have completely lost their tone no operation upon the vagina will prove of any avail.

Alexander some time ago recommended and practised the operation of shortening the round ligaments. The operation is not without risk. When successful the maintenance of the position of the uterus will depend solely upon the integrity of the shortened structures and the cicatricial tissue resulting from the operation. In the majority of cases these, too, may eventually yield, and the discomfort will then be greater than it ever was. This operation should never be suggested nor even entertained.

*Prolapse of Vagina, Bladder, Rectum, and
Intestines*

It is true that the vaginal canal may be removed more or less completely without producing any alteration in the position of the uterus, nevertheless the well-being of the pelvic floor is directly or indirectly dependent upon that of the vaginal walls and other neighbouring structures. Anything which constitutionally or locally produces loss of tone in those tissues, which each and all serve to maintain the position of the uterus, will induce a disposition to or result in a more or less complete prolapse of this organ.

For a time the impairment of the tone of the vaginal canal may be limited to an area. If the anterior wall especially is affected the bladder will descend, and a small bulging of the anterior wall of the vagina will take place. The bulging will gradually increase, and may even protrude beyond the external genitals. As the bladder is included in the tumour so formed it is termed *cystocele*.

In a similar manner the posterior vaginal wall may bulge, and with it the anterior wall of the rectum, producing what is termed *rectocele*.

In a few rare cases the roof of the vagina between the cervix and the rectum may yield, and allow of the intestines occupying the pouch

so formed: to this the term *enterocele* has been applied.

Treatment.—As the treatment is the same as for prolapse of the uterus the reader is referred to this disorder.

CHAPTER XVIII

DISORDERS OF THE CERVIX UTERI

Elongation of the Cervix Uteri

THIS is, comparatively speaking, a rare condition. It is occasionally observed in young women, and may or may not be found in association with a more or less marked amount of descent of the uterus. The cervix may protrude beyond the external genitals, and only then apparently does the subject of this condition complain of discomfort. The cervix is soft and flabby.

Treatment.—Amputation.

Erosion of the Cervix

This condition, which is sometimes called ulceration of the cervix, consists in a more or less extensive denudation of the epithelium covering the cervix.

It occurs more especially in the immediate neighbourhood of the external os, and may extend a greater or less distance up the cervical canal.

It appears to be caused by friction and the presence of discharge, which must not necessarily be of an irritating character. A rectum loaded with hard faecal matter is probably a most important element in its production.

It may be detected in the virgin as well as the married woman.

It must not be considered a disease, but simply a sign of disturbance.

Physical Signs.—The experienced finger will readily detect the condition. It may be necessary to call in the aid of sight; if so, a Fergusonson's speculum will reveal its existence and amount.

Treatment.—Correcting the conditions which produce it is, as a rule, all that is required. Constipation should be avoided, and superabundant discharge checked. A saline aperient like the following may be administered every morning or occasionally.

R	Mag. Sulph.	.	.	5ij;
	Sodæ Sulph.	.	.	3ss;
	Acid. Sulph. dil.	.	.	℥x;
	Tr. Zingiberis	.	.	℥x;
	Aq. ad	.	.	3j.

To be taken in half a tumblerful of cold or warm water.

To lessen the discharge a douche of plain hot water every night may suffice, or a lukewarm injection (one pint), to which has been added half an ounce, or an ounce of Liquor Sodæ Chlorinata, or half to one drachm of Liquor

Opii Sedativ., or half a drachm of tincture of iodine, or 30 grs. of hydrochlorate of quinine.

If the erosion is deep some local application may be necessary, either carbolic acid and glycerine or oxychloride of bismuth suspended in glycerine.

Cystic or Follicular Degeneration of the Cervix

This consists in distension of a greater or less number of the mucous follicles which are scattered over the summit of the cervix. The cervix may be extensively invaded by and studded with these cysts, which contain mucus.

It apparently produces no symptoms.

Treatment.—Evacuating the cysts when a few only exist, or removal of a portion of the cervix when they are numerous, has been recommended; but it is questionable whether the results of operative interference might not be worse than the disease.

Laceration of the Cervix Uteri

Every medical man is familiar with this condition, as it seldom happens that a woman gives birth to a full-time child without the entrance to the womb being more or less torn. As the process of repair proceeds eversion of the lips may occur, or some cicatrization of the vaginal roof extending from the base of the tear may be detected.

By many great importance is attached to the

existence of laceration of every degree. Some believe it to be a fertile source of malignant disease ; no statistics, however, can be of any service in proving or disproving a relationship.

Symptoms.—It is extremely doubtful whether any symptoms can be attributed solely or even largely to this condition. When decided eversion of the lips takes place some discomfort and discharge may accrue. Occasionally I have seen cases in which pain, more or less severe and of a neuralgic character, was evidently due to the involvement of some nerve in cicatricial material. If symptoms co-exist with laceration of the cervix, it is highly probable that they are dependent upon other conditions rather than upon the state of the cervix.

Treatment.—If very decided eversion of the lips of the cervix and erosion has occurred the question of advising the operation for the repair of the cervix may be considered. This operation consists in paring the torn surfaces (great care being exercised about the angle at the base) and bringing them together afterwards with catgut or silver wire. To effect this Heywood Smith's speculum should be passed and the uterus (the mobility of this organ having previously been ascertained) pulled down to the necessary extent by means of the volsella. Any curved needle may be used, but the needle on handle is the most manageable.

When pain is evidently due to cicatricial involvement of some nerve it is very doubtful whether operative interference would prove of any avail; the fear of increasing the distress has always deterred me from suggesting operation.

In every case the symptoms and physical signs should be carefully considered, and each case should be dealt with accordingly.

Cancer of the Cervix

This is an important disease, not only on account of its nature, but because of its frequency and the insidious manner in which it often develops.

It appears most commonly between the ages of thirty-five and forty-five, and is a disease of late rather than of early life. It is occasionally, but practically speaking it is rarely, witnessed before the age of thirty. It is frequently observed after the cessation of menstruation, as late even as the age of sixty-five and at a time when the changes consequent upon the cessation of this function have long since subsided.

Women who have borne children are more liable to suffer from this disease than those who have never been pregnant. It is more rife in women who have had large families. Women who live in celibacy, however, may also suffer from cancer of the cervix.

The importance of the influence of heredity is not now so universally allowed as it was, although it must be evident that it is impossible to formulate any conclusion regarding this question solely by the aid of statistics. The tendency to a disease may be inherited and transmitted, and yet the actual evolution of the disease may take place after one or more generations have experienced immunity. For the evolution of every natural phenomenon certain conditions are necessary, but we are often astounded when we learn how insignificant apparently is the influence which prevents a more or less sudden transformation and which preserves the potential state.

In the ordinary course of events each ultimate particle of every tissue and structure in the body is capable of attracting to itself certain chemical compounds which exist in the blood, and of refusing others which might poison it or at least act deleteriously upon it. By virtue of some disturbing influence, nervous or otherwise, this power of selection may become disordered, and one or two cells so affected may contaminate others in their immediate neighbourhood. It is quite possible that a disease like cancer may be produced after this fashion, and may be caused by some chemical change occurring in the cells. It may depend upon some atmospheric or geological state.

The epithelial variety of cancer is that which most commonly attacks the cervix. The structure thus disordered may break down more or less rapidly or produce an excrescence of some size. Very occasionally in the initial stage it presents the character of a perforating ulcer and without there being any distinct evidence of cell proliferation in the surrounding tissue. As a rule, cell proliferation does occur and causes a greater or less amount of increase in the size of the cervix at the seat of the disease. This proliferation may result in the production of a large growth, cauliflower in appearance it may be, and may invade the deeper structure of the cervix to a variable extent. For a time it may, comparatively speaking, remain superficial. These vegetating growths occasionally present the characters of papilloma rather than of epithelial cancer, and consequently may not be intensely malignant. As the infiltration extends disintegration and liquefaction of the morbid tissue proceeds.

The disease appears invariably to spread more especially and more rapidly in the direction of Douglas's pouch. As the disease extends the bladder or rectum or both of these structures may be opened into, and fæcal matter may pass *per urethram* or urine escape into the bowel. It seldom happens that the body of the uterus becomes very exten-

sively invaded by the disease when it originates in the cervix.

Symptoms.—The commonest symptom is hæmorrhage, which is usually profuse and more or less constant. In the early days of the disease hæmorrhage may be noted during coition. Whenever a patient complains of this occurrence malignant disease should be suspected. It occurs also in fibroid of the uterus, in extensive simple erosion of the cervix, and from vascular growth of the urethra. Discharge is an invariable association of malignant disease of the cervix; it is often watery and sooner or later it becomes offensive. When a submucoid fibroid sloughs the discharge is offensive, but the odour of a cancerous discharge is very characteristic. In the majority of cases pain is a late symptom. It is generally worse towards evening, and it often radiates down the outside of both thighs in the direction of the external cutaneous nerve. Bladder disturbance is rarely complained of until the disease has far advanced.

Malignant disease of the cervix may develop during pregnancy or a woman may become pregnant soon after the disease has attacked the cervix. The discharge from a cancerous growth at a very early stage kills the spermatozoa and thus impregnation is prevented.

It is impossible to state approximately the probable duration of life in any given case of cancer

of the cervix. Some who suffer from this disease may live three or four years—reckoning from the time when a decided symptom of the morbid change was first observed—it is impossible, however, to say how long the disease may exist before any symptom results therefrom. In many cases cancer of the cervix develops rapidly and soon proves fatal, it may be within a year.

Diagnosis.—In the majority of cases the disease is well advanced before the patient seeks advice, and the condition is then very evident. The roof of the vagina may be occupied by an irregular and nodulated mass which may have ulcerated more or less extensively, or the vagina may contain a vegetating mass which may simply be friable or present the characters of a cauliflower excrescence. Usually a malignant growth bleeds readily when touched. In some cases it may be necessary to call in the aid of the sense of sight, and to obtain a good view of the diseased structure, a large-sized Fergusson's speculum should be employed.

It is alleged that syphilitic sores resembling malignant disease have been observed on the cervix; I have never, however, seen such.

Treatment.—If it is evident on examination that the disease has not extended to the vaginal roof simple or supra-vaginal amputation of the cervix may be recommended. If supra-vaginal amputation is not feasible, neither can total

extirpation of the uterus be advisable. The former is an operation with little risk compared with the latter, and the possibility of immunity from or recurrence of the disease is the same for both. I have seen cases in which, after simple and supra-vaginal amputation, there was no recurrence after a lapse of seven years.

In advanced cases palliation only is possible. Some years ago Chian turpentine was vaunted as a cure. I have given this remedy an extensive trial; and although it produces no change in the growth, it still in some cases apparently lessens both the hæmorrhage and the pain. The following is the best formula. A solution of Chian turpentine should first be made.

Sol. Terebinth. Chiæ.

Terebinth. Chiæ	.	.	℥viij;
Alcohol	.	.	℥iv;
Eth. Sulphuric	.	.	℥iv.
Solve si op. sic in bal. cal.			

Mist. Terebinth. Chiæ.

Pulv. Gum Acacia	.	.	℥v;
Aqua	.	.	lb. j.
Solve et adde			
Sol. Terebinth. Chiæ	.	.	℥vj.
Adde gradim et misce bene.			
Et adde			
Spt. Chloroform.	.	.	℥ss;
Aq. ad	.	.	2 lbs.

One teaspoonful of this mixture should be

given in cold milk three times a day, and the dose gradually increased by one teaspoonful daily about every second day until nine teaspoonfuls are taken.

A vaginal injection like the following may be useful, as it tends to check both the hæmorrhage and the discharge.

Liq. Ferri. Perchlor. fortior	.	3x;
Aq. ad	3xx.

Two table-spoonfuls in a pint of lukewarm water as an injection two or three times a day.

For pain, Morphia suppositories, $\frac{1}{2}$ gr. or 1 gr. may be recommended.

CHAPTER XIX

THE DISORDERS OF THE UTERUS

Uterine Hæmorrhage

A MORE or less profuse discharge of blood, either at the time of menstruation or independently of this phenomenon, is a common symptom of disease or disturbance of the organs of generation. We shall here merely enumerate the various conditions which usually produce this symptom, and shall consider more fully its significance and the treatment to be adopted for its amelioration or cessation under the disease or disorder of which it is a recognised symptom. We have treated of the hæmorrhage which may occur during pregnancy under abortion. In a few rare cases, especially in young unmarried women, the cause of the hæmorrhage is obscure, and cannot be classified.

It is most frequently caused by—

Detained products of conception.

Cancer of cervix or body of uterus.

Fibroid growths.

Adenoid degeneration of mucous lining of uterus.

Polypus, intra-uterine or cervical.

Deep granular erosion.

Pelvic inflammation.

Tubal disease.

Extra-uterine pregnancy.

Inversion of the uterus.

Ovarian tumours.

Sexual excitation.

Constipation.

Atonic state of uterus.

Diseases of other organs—kidney, liver, and heart.

Irregularity and occasional profuse hæmorrhages, amounting even to a “flooding,” are noted without evident cause as a woman approaches the age when the reproductive function begins to wane.

Hydorrhœa (non-gravid)

This consists in the discharge of a greater or less amount of watery fluid from the cavity of the uterus. The fluid, which is slightly opalescent, has a specific gravity of about 1003. It is alkaline in reaction and contains chlorides but no albumen. As much as six ounces of this fluid may be discharged with a gush and like quantities may escape from time to time.

The fluid does not apparently accumulate in

the cavity of the uterus but escapes as it is secreted.

Prior to its appearance pain similar to that which the individual usually experiences before menstruation is occasionally complained of.

It is caused by some vaso-motor or other derangement of innervation, and is evinced by those of a highly nervous temperament.

Treatment.—Liq. Arsenicalis, a pill of oxide of zinc and valerianate of zinc, and other similar drugs may be tried.

Hæmatometra

This consists in the accumulation of blood in the cavity of the uterus.

It is most frequently associated with imperforate hymen, although it may occasionally be caused by occlusion of the cervical canal alone.

There is a history of amenorrhœa and of more or less pain or discomfort every month. As the cavity of the uterus becomes more and more distended a cystic and centrally-situated abdominal tumour will eventually be detected.

Treatment.—Provide for the escape of the menstrual discharge.

Subinvolution or Hypertrophy and Superinvolution or Atrophy of the Uterus

Whilst the uterus contains a fecundated and living ovum certain evolutionary changes take

place in its whole structure and thereby the organ becomes greatly enlarged. New muscular fibres, it is alleged, are formed, but this is extremely doubtful. The change is probably the result of a simple alteration in the character of existing cells.

Immediately abortion or parturition occurs, a process of dissolution should begin by which means the uterus should return in from four to six weeks, as nearly as possible, to its original functional and structural state. As a rule, during lactation, for a period of nine or more months, menstruation may be held in abeyance.

From causes of which we are ignorant the dissolutionary changes may be delayed or arrested or they may proceed beyond their prescribed limit. The former condition of affairs is recognised by the name subinvolution and the latter by superinvolution.

Subinvolution consists in an hypertrophy of the tissues of the uterus generally, but more especially of its muscular substance. The bulk of the organ is greater than one anticipates.

Symptoms.—This condition often produces a disposition to prolapse, and consequently the symptoms of this disorder are often complained of. Sometimes there is menorrhagia or metrorrhagia and frequently discharge.

Diagnosis.—This is arrived at usually by a process of exclusion.

Treatment.—Interruption of the dissolutionary process may be to a great extent avoided by care and more especially by rest. When the process has been arrested and the bulky condition of the uterus has been maintained for a greater or less length of time, iodide of potassium and cinchona or other alterative and tonic remedies may be administered. A vaginal douche of plain hot water of the temperature of 110° F. or 120° F. should be recommended at night, and a stimulating injection of carbonate of ammonia 20 or 30 grains to the pint of luke-warm water in the morning.

Superinvolution consists in an atrophy of the uterus generally and of a correlative amount of disturbance of its functions. The organ is smaller than one anticipates.

It results usually in amenorrhœa and sterility.

It is impossible to restore the uterus to a state of structural or functional integrity.

Inversion of the Uterus

This form of displacement, whereby the uterus is turned more or less completely inside out, is not often seen. It is usually a dangerous disorder. It is complete when the whole body of the uterus has passed into the vagina. It may even protrude beyond the external genitals. It is partial when the invaginated portion lodges

more or less within the cavity of the uterus itself.

The cause of this condition is obscure. If it were due to want of tone we should observe this displacement more frequently. Traction on the cord may tend to induce it, but as a rule it occurs spontaneously. Complete paralysis, more or less extensive, of the lower portion of the uterus may produce it. Suction under such circumstances may aid.

It is alleged that inversion of the uterus may occur not only in a woman who has never been pregnant, but who is a virgin. It is doubtful, however, whether violent effort has ever induced it.

The following is a typical case of invagination in a woman after her first confinement. She presented herself as an out-patient at the Hospital for Women. She was twenty-six years of age. She was confined on October 4th, 1888, and had never before been pregnant. Labour pains had been experienced from October 1st until the 4th, when delivery was effected by instruments. Apparently there was no trouble with the "after-birth." The after-pains were severe for one day, but from twenty-four hours after the confinement until the 2nd of September, 1891, when the patient came under observation, and the attempt was made to replace the uterus, no pain nor discomfort locally had been

complained of. For nine weeks after the confinement there was a constant, and at times very free, discharge of blood. Since the confinement she has irregularly but frequently suffered from excessive hæmorrhages. Between these "bleedings" there has been a slightly coloured watery discharge.

I found her extremely anæmic, and she stated that ever since her confinement she had been very pale.

She had no bladder trouble.

Symptoms.—In the case just recorded hæmorrhage was *the* symptom. There is usually a watery discharge more or less discoloured between the "bleedings." Faintness and nervous disturbance, it is said, have been noted at the time the inversion occurs.

Diagnosis.—The finger introduced into the vagina comes upon a smooth pyriform swelling protruding through or engaging the cervix. If it is complete, the base is continuous all round with the cervix. The bi-manual examination will usually reveal the true character of the tumour. When the tumour is pressed firmly, the patient, as a rule, complains of tenderness.

Differential Diagnosis.—Inversion of the uterus may be taken for a polypus. A polypus protruding from the cervix may set up irritation and occlude the canal. The menstrual blood will then accumulate above and cause a tumour,

and yet the patient may complain of a bloody vaginal discharge.

Treatment.—Reduction will, as a rule, only take place in consequence of manipulation ; in very rare cases it may occur spontaneously. The peritoneal surfaces in apposition may adhere. Reduction should be attempted, especially in a recent case, by bi-manual manipulation, the vaginal fingers grasping and compressing firmly but gently the pyriform tumour, whilst counter-pressure is made by the external hand on the abdomen. Pressure may produce distressing pain like colic, and to allay this an opiate may have to be administered, or one grain morphia suppository may be placed in the rectum. If manual pressure fails, constant elastic pressure should be employed, and this is best applied by a cup-and-stem instrument supported by elastic bands fixed to a bandage round the waist, or to straps supported from the shoulders.

No operation, neither amputation nor abdominal section, should be resorted to hastily.

Uterine Polypi

A uterine polypus is a new growth, which assumes the appearance of an excrescence, from the lining of the cervical canal, or body of the uterus. It may be benign or malignant ; the former will alone concern us at present. Pseudopolypi are occasionally formed from remnants

of the placenta or the foetal membranes, and a more or less complete organisation of blood.

Polypi may project either into the cavity of the uterus or into the vaginal canal. When these tumours hang in the vagina, they may at one time have been intra-uterine, or they may have developed in some portion of the cervical canal.

A polypus is usually a solid neoplasm; occasionally, however, it is cystic, and it may or may not have been cystic from the first. It is usually composed more or less of fibrous, muscular, or glandular tissue. The so-called mucous polypus is chiefly composed of gland tissue.

One or more may exist at the same time, and when there are several they often arise close to each other.

These tumours vary in form, character, and vascularity. Occasionally, especially in young girls, they are long membranous bodies, which may even protrude beyond the external genitals.

Symptoms.—When these tumours grow from the cervix, they may exist for a greater or less length of time without producing any symptoms of note. Hæmorrhage and discharge are, however, the usual symptoms complained of. The discharge may be thick or thin and watery. When the polypus projects into the cavity of the uterus, it tends to excite contractions of this organ, and

pain of a "labour-like" character may be experienced.

Diagnosis.—When a polypus engages the cervical canal, or hangs in the vagina, the condition is very evident. If, however, the growth is still intra-uterine, and the symptoms are sufficiently severe, a certain diagnosis is only possible when the uterus is explored, the canal having previously been dilated.

Treatment.—The tumour should be removed. If the pedicle is small, it may be grasped in forceps and twisted off, or separated by scissors. If the pedicle is thick, its removal is best effected by means of the wire *écraseur*.

Adenomatous Degeneration of the Mucous Lining of the Uterus (Fungoid Endometritis)

This disease, which consists in a great new formation of gland tissue in the mucous lining of the uterus, is commonly regarded, although erroneously, as a variety of endometritis.

It may occur at any time during the child-bearing epoch, but it is more especially prone to appear between the ages of thirty-five and forty-five.

It is a benign new growth, but it occasionally borders on malignancy.

Symptom.—Hæmorrhage is the only symptom, and this may constitute either menorrhagia or metrorrhagia, *i. e.* there may be simply hæmor-

rhage at the time of menstruation so that the duration and amount of the "flow" is increased, or the discharge may be more or less constant.

Physical Signs.—Usually the uterus is not much enlarged, and there is practically an absence of physical signs. As a rule, the actual condition is only recognised after the cervix is dilated, and the interior of the uterus is explored.

Treatment.—The whole interior of the uterus should be scraped as thoroughly as possible by a curette or sharp spoon, the cervix having previously been well dilated. Free hæmorrhage often results from this procedure, and it may be necessary to plug the uterus with a strip of gauze which has been soaked in a solution of iron. After scraping, it is advisable to wash out the cavity with a solution of iodine, or apply iodized phenol by means of a uterine probe covered with wool.

Fibroid Tumours of the Uterus.

These tumours, which are composed of tissues homologous with those entering into the structure of the uterus, may exist before the establishment of menstruation, but they appear to grow especially during the period of sexual activity. They seldom develop or grow much after the cessation of menstruation; in fact, we then look for their recession.

Three varieties are recognised according as they consist chiefly of fibrous, muscular, or glandular tissue, the so-called fibromata, myomata, and adenomata. The fibromata, as a rule, are hard and non-vascular, whilst the myomata and adenomata are softer, and usually extremely vascular.

The uterus may become more or less uniformly enlarged by the new growth, or distinct tumours, more or less encapsuled and of various sizes, may grow in or from its substance. These tumours may develop in or from the cervix as well as the body of the uterus.

According as they grow, more especially in the substance of the uterus, externally towards the peritoneal surface, or internally towards the cavity of the organ, they are termed interstitial, subperitoneal, or submucous growths.

Sometimes a subperitoneal growth becomes detached from the uterus, but having previously become attached to some other structure, its nutrition is thereby maintained. Occasionally the peritoneal covering becomes inflamed or undergoes a degenerative change of a fatty character, and ascites may then result. A submucous fibroid, by rupturing the structures which confine it, may escape not only into the uterus, but from the body altogether. When a uterus which is the seat of one or more submucous fibroids harbours an impregnated ovum the tumours are sometimes extruded when abor-

tion occurs or during parturition. The sub-mucous variety frequently presents the character of an ordinary polypus, and sloughing of the neoplasm may or may not take place when this results, according to the extent to which the extrusion interferes with its nutrition.

Some fibroids grow rapidly, whilst others appear to remain stationary, even for years. In a few cases they become calcareous. Not infrequently a fibroma or myoma becomes œdematous, and produces the so-called fibro-cyst of the uterus. In this case fluid is poured out into and distends, more or less markedly, the connective-tissue spaces. The cause of this effusion is unknown. A subperitoneal adenoma may, like an ovary, undergo cystic change and form a unilocular cyst.

The Influence of Fibroids as regards Child-bearing

In many cases the uterus becomes the seat of fibroid change after one or more children are born, and a state of sterility is then apt to ensue. The majority of women who at the time of marriage are known to suffer from fibroids are sterile. A woman with few or many fibroids located under the peritoneum or under the mucous membrane may nevertheless become pregnant, and carry the product to maturity. Abortion may, however, occur in consequence

of the neoplasms interfering with the implantation of the chorionic villi, or with the expansion of the uterus.

The situation of the tumour may render delivery of a full-time child difficult or even impossible, and necessitate delivery by abdominal section. In a few rare cases post-partum hæmorrhage may be caused by the fibroids. During the process of uterine dissolution after pregnancy the tumours are very occasionally affected in such a manner that they gradually dwindle away. This has happened in two cases which have been under my own observation. This is quite feasible, for during the evolution of pregnancy many of these fibroid growths appear to undergo change similar to that taking place in the tissue of the uterus.

In consequence of the increased determination of blood to the genital organs prior to menstruation the majority of patients who suffer from fibroids of the uterus remark that the abdomen enlarges before each period, and that there is occasionally retention of urine at or about this time.

Symptoms.—Sometimes a fibroid uterus attains a great size without producing any noteworthy discomfort, except that resulting from its bulk. It is evident, too, that when small they may exist for years without the patient being aware (or her suspicions being aroused) of the presence of anything very unusual. The

commonest symptoms are increased flow of blood during menstruation, and either difficulty in passing or frequent desire to void urine. The hæmorrhage comes usually from ruptured vessels. The bladder trouble depends largely upon the extent to which the bladder wall is incorporated with the uterus, as the capacity and expulsive power of this viscus are thereby diminished. Occasionally hæmorrhage is noted during coition. Not infrequently dysmenorrhœa is caused by the presence of fibroid growths. When submucoid tumours assume the characters of a polypus, pain may be experienced on account of the uterine contractions. Pain is sometimes due to inflammation of the peritoneum covering a fibroid.

The discharge complained of in association with fibroids of the uterus may either be thick or watery; and when sloughing of a submucous tumour occurs, it becomes offensive.

A fibroid tumour filling the pelvis may compress veins and nerves, and occasionally the ureters. Hydronephrosis may result from pressure of the latter structures.

Differential Diagnosis.—In many cases the diagnosis is easy. It may be difficult, however, to differentiate a fibroid of the uterus from—

Pregnancy,
Ovarian tumours,
Pelvic abscess.

Pregnancy and fibroid may co-exist. In doubtful cases the clinical history should be carefully weighed, and the consistence of the tumour, as well as its duration and size, should be noted. Fibroids of the uterus have, even in the hands of eminent observers, been mistaken for fibroids of the ovary, and also for cysts of the same. In tumour of the ovary there is seldom any disturbance of the menstrual functions; bladder symptoms are rare; and usually, by careful bimanual examination, the body of the uterus can be differentiated from the tumour. In cases of fibroid of the uterus, the cavity of this organ may not be increased notably in size. Some fibroids of the uterus, especially the soft and vascular variety, are more or less cystic. The effect produced upon the cervix, or body of the uterus—if this be detected—by moving the tumour should be carefully noted. Chronic pelvic abscess is occasionally mistaken for fibroid of the uterus. The walls of these abscesses are often hard and indurated; the clinical history and physical signs should, however, be well considered.

A uterus which is the seat of a small fibroid may be retroverted, and the presence of the growth may then only be surmised on account of the apparent increase in the size of the organ.

A sloughing fibroid may be mistaken for

cancer of the uterus because of the presence of an offensive discharge. The odour arising from a sloughing fibroid is different to that associated with cancer, and in the former case there is usually more or less fever.

Treatment.—Operative interference becomes necessary only in a small percentage of the cases. It may be called for either on account of the more or less constant and profuse hæmorrhages which take place, or in consequence of the size of the tumour. When a submucous fibroid sloughs, operation is usually demanded. The symptoms and character of the growth alone must not guide us in deciding regarding the advisability or non-advisability of recommending an operation: in this class of case the age and social position of the patient must thoughtfully be considered. By abdominal section two operations may be recommended: either removal of both ovaries and both tubes, or the more or less complete extirpation of the affected organ. Removal of the ovaries and tubes is not altogether satisfactory nor commendable, and occasionally it is impossible to remove these structures. The more or less complete removal of the affected organ is the most justifiable operation; under no circumstances, however, should it be suggested and advised except after serious consideration. If it is evident that the tumour or tumours are

growing towards the cavity of the uterus, and the hæmorrhage is severe, the interior of the uterus may be explored and curetted by means of a curette, or a small sharp spoon.

The treatment of fibroids by electricity as re-introduced by Apostoli has not produced the good results which it was alleged would accrue, and I have no doubt but that in a few years this treatment will hardly ever be practised. In a few cases the lives of patients have been jeopardised and sacrificed by electrolysis, a risk which is too great when the remote possibility of good resulting is considered.

Palliation should be thoroughly well tried in all cases. For hæmorrhage a mixture containing gallic acid and acid infusion of roses should be administered every four or six hours, or ergot with or without iron may be tried. If the pain is severe phenazonum administered as for dysmenorrhœa will often prove efficacious. The diet should be carefully regulated; butcher's meat should be avoided as much as possible.

Malignant disease of the body of the Uterus

This is not such a rare disease as the majority of authors would lead us to believe, although it is much less common than cancer of the cervix.

It may exist as epithelial cancer or as one of the softer malignant growths—medullary cancer or round-celled sarcoma. The epithelial variety

invades, more or less extensively, the lining of the uterus, and, as in the case of the cervix, the cell proliferation may result in the production of a vegetating mass or, as is more usual, in a more or less rapid loss of tissue. The softer growths more usually transform the whole organ into a tumour which may attain a large size, the general shape of the uterus being, as a rule, well maintained. Occasionally, however, soft cancer develops from the mucous lining, and may even grow with a distinct pedicle.

As the clinical history and physical signs of epithelial and medullary cancer of the body of the uterus differ in many respects from each other we shall consider them separately. The treatment will be common to both.

1. *Epithelial cancer*.—This is especially a disease of advanced life. It seldom appears before the age of sixty. When it primarily affects the mucous lining of the body of the uterus it seldom originates during the child-bearing epoch. Single women are as liable to this disease as women who have borne children.

Symptoms.—The chief and, as a rule, first symptom is discharge. It is often rather watery, but does not generally become offensive nor tinged with blood until the disease has evidently been in existence a few months. Sooner or later, as vessels rupture and the process of degeneration extends, a more or less constant and vary-

ing amount of hæmorrhage is complained of. Pain is seldom noted during the early days of this disease; as in the case of cancer of the cervix, this is usually a late symptom.

Physical signs.—Except in the advanced cases when the uterus has become more or less fixed or the disease has extended to the cervical canal, the physical signs are negative as a rule. The uterus may occasionally appear to be slightly enlarged when we consider the time that may have elapsed since the cessation of menstruation.

Diagnosis.—The age, the clinical history, and the absence of physical signs usually render this easy. It may be mistaken for adenomatous degeneration of the mucous lining, the so-called fungous endometritis; this disease, however, generally occurs before the cessation of menstruation.

2. *Soft cancer of the mucous lining.*—This, too, like epithelial cancer of the body, is a disease more especially of advanced life, and the symptoms are practically the same in both.

Physical signs.—In this variety the uterus is invariably enlarged.

3. *Soft cancer of the body generally.*—This disease appears most frequently between the ages of thirty and forty; it may, however, occur much earlier or much later. The majority of women who evince it are either sterile or have given birth to few children, commonly only one.

As the symptoms and physical signs of medullary cancer and round-celled sarcoma of the body of the uterus are the same, a common description will suffice.

It is a much more rapid disease than any of the other malignant diseases of the uterus, and results in death in from six to twelve months.

Symptoms.—Hæmorrhage is very rarely a manifestation of this disease. During the first three or four months of its existence the menstrual discharge may recur as usual or be slightly increased in amount. As the disease advances amenorrhœa is frequently produced, and it may be complete for four or six months before death. Pain is usually an early symptom of this disease. Sometimes it is most distressing. Sooner or later there is discharge, and this at first may not be offensive. During the early days it is generally watery, but eventually it becomes thicker, and is then invariably offensive. In the majority of cases there is some fever, and fistulous communications with bowel and bladder are often produced just before death.

Physical Signs.—A more or less central tumour, which proves to be the enlarged uterus, is readily detected on careful examination. It may rapidly increase in size, and reach in a short time the level of the umbilicus. Soft and semi-cystic from an early period of its existence,

it gradually becomes almost diffuent, and fluctuation may eventually be elicited.

Diagnosis.—This is never an easy matter.

Treatment.—In early cases of epithelial and soft cancer of the mucous lining, vaginal hysterectomy may be recommended more or less strongly, after careful examination and consideration. In advanced cases of these two varieties, and in cases of medullary cancer, or round-celled sarcoma of the body of the uterus generally, palliation is all we should attempt. Pain should be relieved by morphia suppositories, the offensiveness of the discharge should be mitigated as much as possible, and the comfort of the patient generally should be attended to.

Endometritis

This is an acute or chronic disease, consisting in inflammation of the mucous lining of the uterus.

Some authorities attempt to differentiate inflammation of the mucous membrane of the cervix from inflammation of the mucous lining of the body of the uterus, and describe these two conditions under the respective headings—cervical endometritis and corporeal endometritis. I have even found a few who profess to be able to distinguish a third variety, which they term fundal endometritis.

Of the whole group of the diseases of women this is the most unsatisfactory, because of the great uncertainty there is concerning its diagnosis. Many cases are dispensed with under this designation, but it is always doubtful whether they have been justifiably so grouped. We are too apt to cloak our ignorance under a name.

It is evident that the disease may be caused by the extension of a simple or gonorrhœal inflammation from the vagina—probably by exposure, and in consequence of acts of indiscretion.

In the acute stage the inflammation may go on to suppuration, and produce sloughing of the mucous membrane, or distinct ulcers.

Acute endometritis no doubt frequently co-exists with acute gonorrhœal vaginitis, but this virulent disease extends also very commonly to the Fallopian tubes and to the peritoneum as well.

Physical signs.—These are not definable.

Chronic endometritis.—The characteristic feature of this disease is discharge.

By noting carefully the reaction of vaginal and uterine discharges in many hundreds of gynæcological cases I have failed to throw any light on the nature of the condition called leucorrhœa.

Treatment.—In the acute stage a vaginal douche of plain hot water may be recommended, or to it may be added one drachm of Liquor

Opii Sedativ. In the chronic stage the hot douche (120° F.) at night may prove useful, and in the morning a lukewarm injection of a pint of water to which has been added half an ounce or an ounce of *Liquor Sodæ Chlorinata* or half a drachm to a drachm of tincture of iodine. Occasionally it is advisable to alternate the *Liquor Sodæ Chlorinata* and the iodine.

Metritis

This is an acute or chronic disease consisting in inflammation of the whole substance of the uterus.

Acute metritis may follow gonorrhœa or be caused by exposure and acts of indiscretion.

Symptoms.—Usually there is hæmorrhage and a more or less amount of fever. Sometimes there is pain.

Physical signs.—The uterus is bulky and tender.

Treatment.—Rest in bed and careful regulation of diet. Antipyrin, quinine, and salicylate of soda may be administered according to the case. If it is gonorrhœal a vaginal injection containing one drachm of *Potass. Chlorat.* in a pint of hot water with or without one drachm of *Liquor Opii Sedativ.* may be employed.

Chronic metritis.—This leads to a greater or less amount of fibroid induration.

Symptoms.—These are ill-defined. There is

generally a diminution in the amount of the menstrual discharge.

Physical signs.—The uterus, which is more or less enlarged, is firmer in consistence.

Treatment.—Iodide of potassium or chloride of ammonium internally, and a vaginal douche of plain hot water (temperature 110° F. to 120° F.) every night.

CHAPTER XX

THE DISORDERS OF THE UTERUS—(*continued*)

Versions and Flexions of the Uterus

“IN the human embryo of the third month,” says Quain, “the uterus is two-horned, and it is by a subsequent median fusion and consolidation that the triangular body of the entire organ is produced. The cornua uteri, therefore, of the human uterus correspond with the separate cornua of the divided uterus in animals, and this explains the occasional malformation consisting in the greater or less division of the uterine cavity and vagina into two passages. There is no distinction, in the human foetus in the third and fourth month, between the vagina and uterus. In the fifth and sixth months the os uteri begins to be formed, and the neck is subsequently gradually distinguished. Thickening succeeds in the walls of the uterine portion, but this takes place first in the cervix, which up to the time of birth is much larger and thicker than the body of the uterus.”

As the uterus grows it rises more and more into the pelvis and changes its form. The shape,

however, that it assumes at any given time is determined by a distribution of forces. A crystal as it grows and increases in size maintains its geometrical form, whereas an organic structure varies according as the balance of force aids or opposes its growth. The tree, for example, which grows at the edge of a wood, being acted upon differently by forces, produces outer branches which are well developed and inner branches which are comparatively ill developed. In the case of the uterus, too, we witness a similar correlation, for the configuration of this organ is determined according to the action of varying forces—forces which are natural to the organic material and forces which act upon it from without.

The uterus is produced by the coalition of two similar structures, and so long as the forces belonging to these two structures are fairly equally balanced, an organ is evolved which appears to be bilaterally symmetrical. If, however, the two halves are acted on by unequal forces, bilateral assymetry will necessarily result. This is evident, for we know that the direction which the excess of energy, in the shape of food, shall take, is determined by well-regulated plans. When, however, the two halves are acted upon by unequal forces, there results not only an alteration in the shape of the uterus, but an alteration in its position,

for, instead of occupying a more or less central position in the pelvis, it is approximated to one or other pelvic wall. Under these circumstances, the uterus, as a whole, is drawn towards that side on which the organ is better developed. A similar lateral deviation is often due to some inflammatory disturbance.

The congenital variety of lateral displacement is not necessarily associated with a state of sterility, for I have seen one case in which the uterus was closely applied to the right wall of the pelvis, and in which, at the *necropsy*, the left tube was found entering the uterus at the level of the internal os, and yet the subject of this condition had borne three children. Revelations of this character do not altogether astonish us, for we know that a foetus may attain maturity in localities outside the uterus.

Under ordinary circumstances the uterus, which is located in the pelvis between the bladder and rectum, occupies a position which is as nearly as possible central. Its attitude is erect, and this position is maintained in consequence of certain inherent qualities of the uterus itself, and of neighbouring structures with which it is intimately connected. By virtue of these physico-chemical properties the influence of gravitation and other incident forces is combated. If, however, the physical or chemical state of these tissues becomes deranged, the erect posi-

tion may no longer be maintained, and the amount as well as the direction of the misplacement will vary according to the line of action of the resultant of all the forces which may at the time be exerting their influence. In many cases where adhesions have resulted from pelvic peritonitis, it will be observed that the position of the uterus varies with the position of the patient, and consequently according to the line of action of gravitation.

The uterus is not a fixed but a moveable organ; it ascends and descends with each respiratory movement. It is enveloped in front and behind by peritoneum, and this extensile membrane, spreading out on each side, enters into the formation of the broad ligaments. It is suspended in the pelvis, and is closely incorporated with that portion of the pelvic diaphragm through which it passes.

The habit of the uterus to maintain the erect position may be changed in consequence of some alteration in the physico-chemical qualities of those tissues on which this character depends. Trees, we know, which have always grown erect, may, when transferred to some new soil or climate—and even, in some rare cases, independently of translation—become recumbent. When this phenomenon is observed, no evidence of structural change may be manifested, but it is nevertheless true that

some very decided alteration in the physico-chemical state of the plant must have occurred. When version of the uterus takes place, the deviation is not attributable to change in the organ itself, but to some disturbance of those tissues on the integrity of which the erect attitude of the organ depends. If the body of the uterus lies forwards or backwards, and the condition is one of pure version, the cervix will occupy a position which is the direct opposite of that of the body. Under such circumstances, the structural integrity of the uterus as a whole is maintained.

Let us consider the uterus as it is suspended in the pelvis to be a lever. The fulcrum is that portion of the pelvic diaphragm which grips the uterus and separates the long or pelvic arm from the short or vaginal one. If the structural integrity of the lever as a whole is maintained, then the short arm will move correlatively with, but in the opposite direction to, the long one. We may demonstrate the phenomenon of version by means of a glass rod and a piece of india-rubber sheeting. Take a thin sheet of india rubber, stretch and fix it over the mouth of a glass jar. Through a minute hole in this artificial diaphragm force a glass rod. It will then be observed that if the tension is great enough at the seat of insertion the rod will be maintained in an erect position. If, however, the

tension is lowered, and this can be easily accomplished by relaxing the rubber membrane, then the rod will fall, and the direction of the fall will be determined by the resultant of the forces acting upon it. Without lowering the tension, however, we may cause the rod to assume a recumbent position by augmenting the forces acting upon it.

When version of the uterus is noted we must look upon the misplacement as resulting from some alteration in the state of tension of those tissues which serve to maintain the organ in an erect position, or in consequence of a limitation of their power of adaptation to circumstances. It may be remarked here that this variety of displacement is commonly associated with a greater or less amount of descent as well.

The change in state which tends to affect the position of the uterus may be structural or functional. A woman, for example, may have suffered from a more or less extensive pelvic peritonitis, in consequence of which bands of adhesion have formed between the uterus and some portion of the pelvis, and these in contracting may have produced a version of the uterus. Occasionally it happens that the shorter arm of the lever—the cervix—is dragged upon by cicatrices in the vaginal roof, and in this manner, too, the body of the uterus may be made to assume a more or less recumbent position. If, again, from any

cause—it may be a simple new growth—the weight of the uterus is increased, and no compensatory change has occurred in the concerned extraneous tissues, version may result.

In the majority of cases, however, the change is caused by some physico-chemical, *i. e.* functional disturbance.

The tone or tension of a tissue depends greatly upon the amount of water it contains. If we cut a flower, but do not place the cut end in water, the stalk soon becomes flaccid, and the flower droops. By evaporation a greater or less amount of water has been lost, and consequently the cell tension has been correlatively diminished. In order to re-establish the cell tension, and thereby cause the stalk to become rigid again, it is necessary that the water lost by evaporation should be replaced by absorption. For the process of nutrition water is all-important, and wherever we witness a tendency to great molecular variation we expect to find evidence of an abundant supply of this compound. Considering, therefore, the changes which take place in the uterus during normal pregnancy, we are justified in assuming, not only that water plays an active part in the production of these changes, but that under ordinary circumstances the tone of this organ depends very largely upon the presence of this compound. In all living tissues the cell membrane ought to possess the power of regu-

lating the amount of filtration that takes place. This power may, however, be lost, or at least disturbed by a variety of causes, but more especially through the agency of the nervous system. In consequence of some change of this character versions of the uterus may be induced by falls and mental shocks.

The erect position of the uterus depends apparently upon the pressure exerted by that portion of the peritoneum which covers this organ, and also by that which enters into the formation of the broad ligaments. If, therefore, the extensibility of this serous membrane becomes decidedly impaired it is highly probable that the uterus will assume a more or less recumbent position in the pelvis. For this reason version of the uterus is often detected in association with atony of the abdominal walls.

In yet another group of cases the change may be due to the absence or deficiency of some important ingredient. In the case of plants we remark that the rigidity or flexibility of these structures is regulated by the conditions under which they are cultivated. Young oaks may be found so flexible that they have to be supported by props.

The changes in state which produce *flexion* may now be considered.

Organic structures are composed of highly unstable bodies, and, consequently, when exposed

to incident forces they are extremely prone to undergo change. In the case of the drosera the tentacle bends whenever the gland is irritated. Here the superficial cells located at the seat of the bend are supposed to be the cells affected, and yet the most careful examination has failed to detect any evidence of change in these cells. In *Fritillaria imperialis* the flowers are pendent whilst the fruit is erect. This change is produced by a more rapid growth on the lower side and is attributed to the influence of gravitation. In some classes of plants, if an upright growing shoot is suddenly and sharply struck at a point where growth has ceased, a wave travels up and causes the structure to bend towards that side from which the blow was received. The awn of the seed capsule of *Erodium gruinum* becomes twisted into a spiral at its lower end when the fruit dries, but it is extended straight when moistened. If two metals of unequal expansion are welded together, by raising or reducing the temperature of such a bar, we alter its form.

By unequal growth organic structures become bent. In the case of the human embryo the dorsal surface grows more rapidly than the ventral, hence the arching of the back, the bending of the head on the breast, and the tail on the ventral surface of the body.

In cases of flexion of the uterus it is more

than probable that the alteration in the configuration is occasionally of a congenital character and depends upon unequal growth. In flowers and fruits we find abundant evidence of this variety of irregular development.

It is now generally admitted that plants and animals are not only reproduced from cells, but that they consist of cells and that individual cells or groups or layers of cells may grow differently, according to the influence of tensions and pressures. Chemical changes may take place in cell-walls, but the whole thickness of the membrane may not reveal the change.

Under ordinary circumstances there exists a mutual tension between the membrane covering the uterus and those structures which enter into the actual formation of the organ. This tension is revealed when the peritoneum covering the uterus is more or less extensively cut; the underlying tissue immediately expands. In consequence of some variation in this tension relationship a more or less marked flexion of the uterus may result.

The configuration of the uterus depends largely upon the general character of the cells which enter into the formation of the inner structure of this organ. According to the rate of growth the cells may assume a variety of shapes, and the pressure exerted by them is neither uniform nor constant. When flexion of the uterus is thus

produced, the concavity is on that side in which the cells are more compressed.

Symptoms.—In cases of version with more or less descent there is often “bearing-down” pain and a frequent desire to pass water. Discomfort in the lower bowel is occasionally observed in association with retroversion.

It is still generally believed, apparently, that “by interfering with the escape of menstrual blood, by disordering uterine circulation and keeping up hyperæmia, by causing pressure and friction from contact with surrounding parts, and by creating a barrier to the entrance of seminal fluid,” flexions and versions “become of great importance and require special attention.”

My firm conviction is that there is no evidence to show that flexions and versions interfere with the escape of menstrual blood. Many women suffer more or less during menstruation, and although we may occasionally detect some alteration in the configuration or position of the uterus in a case of dysmenorrhœa, it does not necessarily follow that the two conditions are related to each other as cause and effect. Frequently we remark that women with decided flexions and versions of the uterus experience no discomfort whatever during menstruation. It is more than probable that the circulation is not disturbed merely by an alteration in the shape

or location of the uterus. If the tone of the organ is impaired, then the vessels may not receive that amount of support from the surrounding tissues which is so essential for their well-being. In the animal and vegetable kingdoms we have abundant proof that mere shape does not interfere with the passage of that fluid which nourishes the tissues. The tendrils and branches of plants perform many gyrations, and assume a variety of shapes without the vascular system in any part of its course being necessarily disturbed. Those who assume that in flexions and versions of the uterus the circulation is disturbed, forget apparently that they are dealing with living structures with tissues which are endowed with a large amount of power of adaptation to circumstances. The influence of pressure and friction is undoubtedly very much exaggerated. Occasionally pressure symptoms are observed, but they depend upon the cause of the change in position or shape of the organ, and are induced by gravitation. New growths may arise in the pelvis from the uterus and ovaries and attain a great size, and yet no pressure symptoms may be caused by their presence. It is alleged, too, that flexions and versions are a cause of sterility, as they create a barrier to the entrance of seminal fluid. If we examine the genital organs of the females of many of the lower animals, we shall observe that greater

barriers to the entrance of seminal fluid exist naturally in them. The spermatozoa appear to experience no difficulty whatever in effecting an entrance into the corkscrew-shaped uterus of the dugong. In the cervix and body of the uterus of the sheep and goat are found groups of laminæ presenting the appearance of a number of successive ora tincae, and these it might be alleged would hinder the progression of the spermatozoa. A careful study of the various methods whereby the process of fecundation is carried on in plants and animals, and a close examination of the genital tract in mammalia, compels us to admit that the spermatozoa are attracted towards each other, and that they do not meet and coalesce simply because they chance to be traversing the same passage. In the case of fishes, for example, by some elective affinity the species is kept pure.

Diagnosis.—The position of the uterus can only be determined by careful physical examination. If the bi-manual method is dexterously practised, the sound—which is indeed a dangerous instrument—can be dispensed with. The vagina should be carefully explored, the position of the cervix, the direction of the os, and the presence or absence of any body lying on the pelvic floor should be noted. Having ascertained these facts we are in a position to appreciate the significance of a body which may be

detected by the external hand placed on the lower abdomen. If the body of the uterus is in a natural position, is anteflexed or anteverted, there ought to be no difficulty, except when the patient is extremely fat, in determining not only the location, but the approximate size of this organ. Greater difficulty is experienced in diagnosing retroversion or retroflexion, as the body of the uterus cannot always be grasped between the vaginal and abdominal fingers.

The uterus may be flexed or verted laterally.

When the uterus is verted the os looks in a direction away from the fundus, whereas in flexion the os may look more or less downwards or even in the direction in which the fundus lies.

Treatment.—In all text-books on diseases of women the various pessaries which from time to time have been devised for the purpose, if possible, of restoring the uterus to and maintaining it in its recognised form and position are carefully enumerated, and each is usually described with much exactness. The good effects produced by the application and adaptation of these mechanical agents are duly paraded, but it is impossible to conceive how they can affect the configuration or position of the uterus except in a few rare cases, and in such only on a tension theory. In cases of retroversion with descent a

watch-spring ring pessary placed in the vagina may counteract the influence of gravitation, and relieve the discomfort resulting therefrom. It is difficult, however, to believe that any mechanical appliance in the vagina can induce the tissues to change their character forthwith; in fact, this method of treating flexions and versions of the uterus is not rational, and probably it will not be long tolerated. If greater caution were exercised in treating the malpositions and altered configurations of the uterus, I am convinced that many women would be freed from a great deal of suffering, and that many who have practically become invalided by a too vigorous treatment would have passed through life more comfortably.

If the version is due to want of tone an attempt should be made to restore such by the administration of blood, nerve, and general tonics, according to the indications of each individual case. Sometimes a lime salt like chloride of calcium will prove beneficial. A stimulating or tonic injection containing ammonia or *Liquor Sodæ Chlorinata* tends to induce cell change and increase the watery material contained in their bodies.

Flexions of the uterus are produced by structural variations which are as yet but ill-understood. On the concave side the cells are compressed, whilst the cells on the convex side are

expanded, but it is impossible at present to say whether the alteration in the configuration of the organ is primarily due to change occurring on the convex or on the concave side.

CHAPTER XXI

THE DISORDERS OF THE FALLOPIAN TUBE

Salpingitis

THIS consists in an acute or chronic inflammation of the Fallopian tube, and is invariably associated with a greater or less amount of pelvic peritonitis. In consequence of the involvement of the peritoneum the fimbriated extremity of the tube usually becomes hermetically sealed. Occasionally the tube is greatly thickened.

It is characterised by no well-defined symptom, and the physical signs may be similar to those of ordinary pelvic peritonitis.

It occasionally results in the production of hydro-, hæmato-, and pyo-salpinx.

It is caused by the extension of gonorrhœal and other inflammatory diseases to the lining membrane of the tubes from the uterus.

Hydro-salpinx

This consists in the distension of the Fallopian tube with a serous fluid. The fluid is alkaline

in reaction and contains albumen, which is thrown down on boiling if the fluid is rendered slightly acid. Its specific gravity varies; usually, however, it is about 1008. Generally both tubes are similarly affected.

Symptoms.—A common symptom is pain immediately before and during menstruation; and this pain, which is different, as a rule, to that of functional dysmenorrhœa, may be referred not only to the lower abdomen, but also to the hip and vagina. Pain may or may not have existed in association with menstruation from the establishment of this function; if, however, it did the patient is usually able to fix a time when it became intensified and altered in character. Many of the patients who suffer from this condition are married women who have never been pregnant, and the disorders which precede it develop generally very soon after marriage, insidious though the whole train of events may occur. Sometimes there is menorrhagia.

It is caused by gonorrhœa and inflammation of the pelvic organs after abortion or parturition.

In the majority of cases the fimbriated extremity of the tube is occluded and firmly adherent to the ovary. The quantity of fluid found in this variety of tumour is usually small. It tends to accumulate more especially towards the fimbriated extremity and produces a swelling

of a greater or less size which gravitates, as a rule, to the pelvic floor.

Hydro-salpinx is sometimes noted in association with fibroid tumours of the uterus.

The diagnosis of this condition is difficult.

Treatment.—Whenever it is determined that the tube or tubes are more or less distended with fluid removal of the diseased structures should be recommended, as death may result should rupture spontaneously take place.

Pyo-salpinx

This consists in the distension of the Fallopian tube with pus.

It is characterised by the same symptoms and signs as hydro-salpinx and hæmato-salpinx, and is caused by the same conditions. The symptoms resulting as a rule from this disorder are more decided than those associated with hydro-salpinx, and usually the tumour is more adherent to the neighbouring structures. Menorrhagia or metrorrhagia is more frequently produced by this variety of distension than either of the others.

Treatment.—Removal by abdominal section.

Hæmato-salpinx

This consists in the distension of the Fallopian tube with bloody fluid.

It is characterised by the same symptoms and

signs as hydro-salpinx, and is preceded by occlusion of the fimbriated extremity of the tube and constriction towards the uterine end. The contained fluid is liable to be augmented during menstruation, and consequently the tumour is increased in size, whilst the pain is correlatively intensified.

Treatment.—Removal by abdominal section.

CHAPTER XXII

THE DISORDERS OF THE OVARY

Prolapse of the Ovaries

THIS consists in one or both ovaries, which may or may not be enlarged, occupying a lower position in the pelvis than they ought to, so that they come to rest more or less completely on the pelvic floor.

It may exist quite independently of displacement of the uterus, although it very frequently is detected in association with retroflexion or retroversion.

It depends either upon increased weight of the gland without compensatory change in the mesentery of the ovary, or results from an atonic state of the latter structure.

It is brought about in many cases apparently by the measures adopted for lessening or preventing the possibility of conception, especially when this interferes with the gratification of the sexual feeling. It may also be produced by over-indulgence in sexual intercourse as well as by masturbation.

Symptoms.—The chief symptom is a more or less constant and aching pain in the lower abdomen, which is aggravated as a rule about the time of menstruation, but is at all times greatly lessened by rest in the recumbent position. The discomfort is intensified by constipation.

Diagnosis.—The swelling, which is felt as a rule lying posteriorly on the pelvic floor, is usually capable of being recognised readily as an ovary, whether the gland is enlarged or not. It may be free or adherent.

Treatment.—If there is evidence of want of tone, an attempt should be made to improve the tone of the ovary and its mesentery. This may be done by using a vaginal douche of plain hot water every night, and a lukewarm injection containing one ounce of liquor sodæ chlorinata every morning. Internally, bromide may be administered at first, especially at bedtime, and afterwards a nervine tonic, say of Acid. Phosph. Dil. and Liq. Strychniæ, or a tonic treatment may be adopted from the first. I strongly deprecate the use of pessaries in all cases of this description, although it is quite possible that a woman who is the subject of prolapse of the ovaries may, if she evinces at the same time a disposition to prolapse of the vaginal walls and pelvic floor, for a time experience relief from the introduction of a mechanical support.

Ovaritis

Inflammation of the structure of the ovaries does no doubt occur, both in the acute and chronic form ; but I maintain that whenever the diagnosis of this condition is made, it is extremely doubtful whether any evidence of the disorder would be found if the suspected ovary were removed and examined.

I know of no symptom nor physical sign by which either the acute or chronic variety may be recognised.

Simple enlargement and tenderness of the ovaries are not criteria, for these phenomena may depend upon a variety of other conditions. Immediately before menstruation the ovary is often greatly enlarged in consequence either of an increased determination of blood to the gland, or of actual hæmorrhage into a Graafian follicle, which usually becomes gradually absorbed. Shrivelling of the ovary is a natural phenomenon which takes place correlatively with the dehiscence of ova, and may proceed with greater or less rapidity quite independently of any inflammatory action which can be recognised.

By ovaritis I mean inflammation, of course, of this structure by itself, including its peritoneal covering, for I believe that it is impossible to have ovaritis without some peri-oophoritis ; and this element alone produces uncertainty of

diagnosis, for it seldom happens that we are in a position to affirm what has been the cause and where the starting point of a pelvic peritonitis.

Papilloma of the Ovary and Fimbriated Extremity of the Fallopian Tube

The ovary and tube occasionally become the seat of papillomatous growth, benign and malignant, without the co-existence of cystic degeneration. It is a chronic disease.

It results in the production of ascites.

On careful vaginal examination one or more small soft swellings may be detected in the pelvis, and these are usually fixed to the pelvic floor.

Treatment.—Abdominal section.

Abscess of the Ovary

Abscess of the ovary is, comparatively speaking, a rare condition. It appears to occur most frequently in association with pelvic peritonitis which develops after parturition or abortion. I have, however, seen a case of fatal peritonitis from rupture of an ovarian abscess in a single woman who had never been pregnant.

Pain is the chief symptom.

It is highly probable that many cases of abscess of the ovary run a similar course to the usual pelvic abscess.

Solid Tumours of the Ovary

The solid tumours of the ovary, which may be either benign or malignant, are so rarely met with that it is impossible to give a general description of these varieties. I shall, therefore, content myself by giving here a short account of each case I have seen.

Benign Cases

(1) *Fibroid of ovary with ascites and œdema of both legs.*—The subject of this growth was forty-nine years of age, and had ceased menstruating at the age of forty-three. Three years prior to coming under observation she had detected a small lump on the left side, and lately it had rapidly increased in size but without pain. During the two months preceding operation the abdomen had become generally enlarged, and there was slight œdema of both lower extremities. There was no emaciation.

Operation.—The abdomen contained a large quantity of ascitic fluid. The growth, which was a solid tumour of the left ovary of the size of a foetal head, was removed after the usual ligation of the pedicle.

The tumour was a fibro-adenoma, and showed signs of fatty degeneration.

(2) *Myoma of the left ovary weighing twelve pounds.*—The history of this tumour, which occurred in a single woman aged twenty, was not

explicit. The tumour had not been observed until she came to hospital. She then stated that she had not been unwell for six months, having previously menstruated regularly from the age of fourteen. The abdomen was occupied by a hard tumour which reached to the umbilicus. It was fairly central in position, and appeared to be more cake-like in outline than a uterine fibroid. The uterus was distinct from the tumour. It was removed like an ordinary ovarian cystoma, and proved to be a myoma of the ovary.

(3) *Sarcoma of the right ovary*.—This growth developed in a woman who had given birth to three children, and when she came under observation she was thirty-five years of age. She complained of pain in the lower abdomen and of amenorrhœa which had been in existence four months. The pelvis was occupied by a firm swelling which pushed or dragged the uterus to the right side. This tumour could be defined abdominally, and its upper border reached to three inches above Poupart's ligament on the right side. The abdomen was slightly distended, but there was no evidence of free fluid in the peritoneum. There was no œdema of the lower extremities. The patient had been losing flesh for two months. The tumour rapidly increased in size, and became almost fluctuant. The patient gradually became more and more ema-

ciated, and died when the disease had probably been in existence nine months.

Post-mortem.—There was practically no ascites. The right ovary was enormously enlarged and proved to be a round-celled sarcomatous tumour.

(4) *Solid carcinoma of both ovaries with ascites and slight œdema of the lower extremities.*—This patient was a married woman of the age of forty-one, who had borne three children and had had one miscarriage. The abortion was a six and a half months' pregnancy, and it had occurred two months before she came under observation. Since the miscarry she had complained of slight pain in the lower abdomen, swelling of the abdomen, rapid loss of flesh, and œdema of the lower extremities.

The abdomen was enormously distended, but, occupying the lower portion, two apparently distinct swellings were felt; the one on the right side appeared to be the larger. The uterus was fixed.

In ten weeks this patient was tapped eight times. She died five months after the miscarriage.

Post-mortem.—The ovaries were transformed into epithelial cancer. They possessed each a distinct pedicle and presented no adhesions. The right contained a wedge-shaped piece of a yellow colour which was evidently an infarct.

(5) *Solid epithelial cancer of both ovaries, with*

ascites, but no œdema.—The subject of these growths was a single woman, aged thirty. For two months she had complained of pain in the lower abdomen. Six weeks ago she observed a small lump on the left side, close to the bend of the thigh, and since then the abdomen had gradually increased in size. For two months there had been a constant but slight hæmorrhagic discharge *per vaginam*.

The abdomen, which was distended and tense, was largely tympanitic. There was evidence of a small amount of ascitic fluid. On the left side was felt a hard swelling, and this *per rectum* was apparently solid and nodulated. She was greatly emaciated, and there was no œdema of the lower extremities.

The disease produced a fatal result in three months.

Post-mortem.—The abdomen contained clear, amber-coloured serum. Here and there the peritoneum was studded with small malignant nodules. The left ovary was adherent to the anterior abdominal wall. It was lobulated and of the size of a foetal head. The left Fallopian tube was infiltrated with cancer. The right ovary was in a similar condition to the left, but was much smaller. The uterus was adherent to both tumours. The disease was epithelial cancer.

Cystic Disease of the Ovary

In attempting to describe the cystic tumours of the ovary great difficulty is experienced on account of the many varieties which are encountered, the difference in their mode of growth, the changes they may undergo, and the diverse symptoms and physical signs which may result from their presence.

The tumour may be largely unilocular or multilocular. It may possess a distinct pedicle or may have developed more or less extensively between the layers of the broad ligament. If multilocular it may be of the Rokitansky variety, in which case both ovaries are invariably affected. The Rokitansky tumour is composed of many small cysts which vary in size from a pea to a grape, or occasionally a small walnut. The contents of an ovarian cyst may be thin and watery, thick and colloid or mucoid, bloody or of the dermoid character. The cyst-wall may inflame and adhesions may form between it and any part of the abdominal cavity, or the viscera contained therein. The cyst-wall may become more or less extensively infiltrated by simple and malignant papilloma, or, as rarely happens, the external or peritoneal surface may become the seat of epithelioma. The symptoms and physical signs resulting from a cystic tumour will therefore vary.

The Unilocular or chiefly Unilocular Cyst

This, which is usually the most simple and typical variety of ovarian cysts, consists principally of one cavity. It develops, as a rule, without producing any symptoms, is regular in outline, and assumes a globular shape. The fluid contained in these cysts is thin; it generally possesses a good pedicle.

The diagnosis of this variety is generally easy. In the majority of cases the patient will remark that the tumour—whatever its position at the time of our examination may be—originated on one or other side. Unless the tumour is rather small and its walls not very tense, fluctuation can be readily elicited, and the physical signs resulting from the confinement of the fluid are very evident. The independence of the uterus can generally be determined by a careful bimanual examination.

Although the unilocular cyst commonly develops without producing any disturbance of the menstrual function, amenorrhœa may, nevertheless, result, and some difficulty in arriving at a conclusion regarding the true nature of the tumour may be experienced. It might, for example, be an ordinary pregnancy or hydramnios. It seldom happens, however, that in one given case which simulates pregnancy more than one characteristic sign of this physiological

phenomenon is detectable. Auscultation of the tumour detects no foetal heart nor uterine souffle, presupposing that the size warrants the expectation of these reliable signs of pregnancy. If there is amenorrhœa it seldom happens that we find colostrum in the breasts; or, again, if colostrum can be obtained from the breasts the menstrual discharge will throughout have recurred with regularity. It is, of course, to be remembered that a woman may during the nine months, or some part of the time that she is pregnant, menstruate with her wonted regularity.

This variety of tumour is easily differentiated from the majority of cases of ascites, although now and then, especially when the latter is present in consequence of some malignant disease, the physical signs of unilocular ovarian cyst and ascites may closely resemble each other.

In all cases of fairly central and cystic abdominal tumours the bladder should at the very outset be emptied by the catheter.

It sometimes, although rarely, happens that the swelling produced by an encysted serous peritonitis simulates a unilocular ovarian cyst; the clinical history will, however, invariably aid us in determining which we have to deal with.

The Multilocular Cyst

This, which is the commonest variety of

ovarian tumour, is composed of a greater or less number of distinct cavities; and although the usual globular outline may not be altered thereby it nevertheless frequently happens that one or more of these loculi project decidedly, and cause the surface of the tumour to become uneven. The material contained in the loculi varies, not only in different but the same tumours. It may be quite fluid and more or less bloody, or it may be colloid or mucoid in character.

If the cystic change begins about the hilum of the ovary the tumour, instead of possessing a pedicle, may develop more or less extensively between the layers of the broad ligament. In consequence of this anomalous downward growth the uterus may be pushed and dragged out of its natural position, and may even appear to be somewhat closely incorporated with the new growth.

Like the unilocular cyst, this tumour usually grows without the patient experiencing much pain. It is, however, much more likely to form adhesions with the omentum and abdominal viscera than the more simple variety. Degenerative changes, too, are much more likely to affect the multilocular than the unilocular cyst.

The symptoms, complications, and physical signs produced by tumours of this class are various.

Menorrhagia or metrorrhagia is a common asso-

ciation when the cyst develops between the layers of the broad ligament. If this change in the ovary occurs in a woman who, though well advanced in years, has never menstruated, or originates after the cessation of menstruation, a more or less constant, although slight, discharge of blood is often complained of. Amenorrhœa is a rare association, although I have seen it, especially in those cases in which free hæmorrhage into the interior of two or more loculi has occurred.

Pain may occasionally constitute a symptom either on account of adhesions which have formed or when, in consequence of septa rupturing, the tension of the tumour is suddenly increased by a more or less extensive hæmorrhage into the enlarged loculus.

Rupture of the multilocular cyst sometimes occurs in consequence of a gradual thinning or of a malignant change in the limiting wall.

Ascites may develop as a concomitant of simple or malignant degeneration of the cyst wall.

Fluctuation cannot always be elicited in tumours of this class, for the readiness with which this physical sign can be obtained depends upon the thinness of the fluid and the absence of impediments to the transit of the wave. In multilocular cysts the wave of succussion is interrupted by the septa, and the character of

the fluid is, as a rule, such that it is not sufficiently disturbed by this act to enable us to differentiate it from a solid medium.

When the tumour is more or less irregular a careful examination of the projecting nodules may reveal their cystic nature, and this will aid us very materially in a diagnosis.

Rupture.—When this accident has occurred it seldom happens that the patient is in a position to throw any light on the probable condition of affairs, so insidiously in fact may the extravasation take place in consequence of the character of the fluid, which is usually more or less gelatinous. The physical signs resulting from a ruptured ovarian cyst are similar to those of ascites, only the fluid in the former case being, as a rule, thicker and more jelly-like than that in ascites, will not gravitate so readily to the most dependent part. Peritonitis is produced when the contents of the cyst are not innocuous.

Ascites.—This complication usually arises in association with a simple or malignant degeneration of the cyst wall. Œdema of the lower extremities is rarely observed when the degeneration is of a benign character, but it is a common association when the change is malignant.

Multilocular ovarian cysts are occasionally practically solid. If fluctuation cannot be elicited it is not always easy to diagnose them from soft

fibroids. Mistakes, too, may be made when a somewhat soft but apparently solid tumour develops between the layers of the broad ligament, for fibroids which are probably uterine are sometimes found in this situation. The uterus may, as I have already remarked, be pushed and dragged out of its usual position, and may even appear to be more or less incorporated with the new growth, and whether the latter is ovarian or uterine may be difficult to determine, as the uterus itself in either case may or may not be enlarged. The probable relationship of the tumour to the uterus should be determined by a careful bi-manual examination. Over the majority of soft fibroids a bruit is heard, whilst no intrinsic sound is heard on auscultating an ovarian cyst.

An extra-uterine pregnancy may resemble an ovarian.

Rokitansky cyst.—This is a rare variety of the multilocular cyst, and both ovaries are generally found in a similar state. These tumours, which never attain a large size and are invariably confined to the pelvis, are composed of a congeries of cysts of small size. They present the appearance of a bunch of grapes, and each cyst is considered to be a diseased follicle. It is probably a congenital tumour.

Severe hæmorrhage is a common association of the Rokitansky tumour.

Cysts of this description, especially when they are nearing their probable limit of growth, are recognised by careful examination.

Hæmatoma or Blood Cyst of the Ovary.

This, which is a pure blood tumour, results from recurring hæmorrhage into the structure of the ovary. It never attains a large size, and its wall, which is usually very thin, is very prone to rupture, and fatal peritonitis may thereupon ensue. It probably begins to develop about the time when the menstrual function is, or should be, established. Sometimes the subject of hæmatoma of the ovary has reached the age of twenty without ever having menstruated.

The symptoms, unfortunately, are usually simply dysmenorrhœa and a disposition to amenorrhœa. In those cases in which menstruation as a discharge has not appeared dysmenorrhœa is nevertheless experienced, and may be the only symptom. During the intermenstrual periods pain may or may not be complained of.

Dermoid Tumour of the Ovary

This variety of cystic disease of the ovary may, although it seldom does, produce a tumour of great size. It possesses a thick connective-tissue wall from which hair, teeth, and bone may be found growing, whilst the cavity of the cyst is filled with a more or less fluid but buttery

material. The secretion is derived from the sebaceous glands which enter into the composition of the cyst wall. The character of this fluid varies ; it may be an oily liquid which will solidify on cooling, or it may be quite thick and caseous.

These cysts are liable to inflame, but not more so apparently than the multilocular ovarian. The wall of this tumour, like that of the multilocular ovarian, may become invaded by epithelial cancer.

A dermoid of the ovary is usually a unilocular cyst; occasionally, however, it is multilocular, and in the latter case it may be partly dermoid and partly like an ordinary ovarian.

These tumours may exist for years without producing any symptom ; generally, however, from a very early period of their existence they give rise to pain, and this at first may be periodic, but sooner or later it tends to become a more or less constant symptom, and it is invariably referred to the side which is the seat of the new growth. Menorrhagia is occasionally noted in association with dermoid of the ovary ; as a rule, however, it causes no alteration in the amount of the flow.

The physical signs of tumours of this class are similar to those of an ordinary ovarian, although they seldom if ever are fluctuant. Hard and almost bony masses which are significant may be

detected in some portion of the cyst wall on careful examination.

In all cases of pedunculated cyst of the ovary urgent symptoms may at any time arise in consequence of the pedicle becoming twisted.

Treatment.—Under any circumstances early removal by abdominal section should be advised, as inflammation may occur at any time, and the adhesions resulting therefrom tend only to increase the risk when operation is resorted to. Throughout the operation the strictest cleanliness should be observed; the spray can be dispensed with. The incision should be in the middle line. Except when the tumour is very multilocular or the contents are suspected to be of a dermoid character the size of the cyst should be reduced by tapping. The pedicle should be transfixed, tied, and then cut. Adhesions may be dealt with before the pedicle is touched. Occasionally it is necessary to wash out the cavity of the peritoneum with warm water, and even to drain it for a greater or less length of time after the operation by a glass drainage-tube. The abdominal wound may be closed by silk or preferably silkworm gut sutures. The wound may be dusted with boracic powder and dressed with pads of absorbent gauze.

The after-treatment will depend greatly upon the condition of the patient.

CHAPTER XXIII

TUMOURS OF AND IN THE BROAD LIGAMENT

Cysts of the Broad Ligament

THE cysts of this group, which are invariably unilocular, arise, independently of the ovary, from some structure in the broad ligament. They do not necessarily grow into the broad ligament; in fact, often they are pedunculated, so they are not differentiated solely by location. Frequently cysts of the ovary grow into the broad ligament. These, however, are not included in this group.

Cysts of the broad ligament are by some authors called parovarian, under the belief that all these tumours originate in the parovarium, which is a remnant of the Wolffian body. I am, however, of opinion that they do not all arise from this structure, although they are all evidently developed from structures which have atrophied more or less completely.

These cysts may appear either during the period of functional activity of the organs of generation, or after the cessation of menstruation. Frequently they grow with a distinct

pedicle, but commonly they are embedded more or less in the substance of the broad ligament. The peritoneal covering, which is generally loosely attached to the proper cyst wall, can be readily separated. The cyst wall is usually very thin. The fluid in a broad ligament cyst is generally clear like tap-water, or slightly opalescent, and of a specific gravity of 1008. Occasionally it is sero-sanguinolent. When it is limpid the contained amount seems in some cases to vary from time to time, so that the tumour is sometimes more and sometimes less tense. These cysts are often extremely flaccid, and consequently it is not always easy to determine their existence. When the tumour is tense fluctuation is readily elicited.

Symptoms.—Frequently the patients suffering from cyst or cysts of the broad ligament—because one on each side often exists—complain only of swelling of the abdomen. “Bearing-down pain” is a common association of this tumour. Sometimes menorrhagia and metrorrhagia may be observed.

Diagnosis.—This is as a rule easy, except when the tumour is extremely flaccid. They are usually globular, and being unilocular, fluctuation is easily obtained.

Treatment.—Tapping has been recommended. After this operation it is quite possible that no re-accumulation of fluid may take place, or it

may be years before the cyst distends again ; as, however, papillomatous nodules are often found in the interior of broad ligament cysts it is advisable to remove them completely and as early as possible. These cysts are removed by abdominal section after the same manner as ovarian cysts. When they are more or less extensively embedded in the broad ligament they should be shelled out, a process which is often tedious and which may produce troublesome hæmorrhage.

Myomatous Tumours of the Broad Ligament.

Solid tumours, similar to those which grow from the uterus, are occasionally found growing more or less deeply into the substance of the broad ligament.

They may be removed by enucleation, but the hæmorrhage during this performance is often alarming.

Sarcoma of the Pelvic Bones.

This is an exceedingly rare tumour. I have seen only one case. The subject of that growth was a woman aged fifty-four. For three months she had complained of pain in the left iliac region, but at no time did she complain of pain in the leg. The tumour, which was firmly fixed to the left pelvic wall, had pushed down the vaginal roof on this side. It reached abdominally to the level of the umbilicus. Reckoning

from the date on which the patient first experienced pain, this tumour proved fatal in five months.

Notes of the post-mortem in this case.—The tumour was not in close apposition with the anterior abdominal wall. The left ovary, which was cystic but small in size, was pushed to the right side, and so also was the sigmoid which ran across the upper part of the tumour. The uterus was quite free from the growth. The tumour appeared to have started from the peritoneum underlying the structure of the left broad ligament. It had separated the layer of this broad ligament, and grown upwards in the mesentery of the sigmoid.

CHAPTER XXIV

FREE FLUID IN THE PERITONEUM IN ASSOCIATION WITH PELVIC DISEASE

IN the majority of cases the fluid which is found free in the abdominal cavity resembles the normal transudations of the body. Occasionally, however, it is blood, or the contents of some cyst or abscess which has ruptured.

From the peritoneal sac of a well-fed animal, especially after the ingestion of a good meal, one is able to collect a quantity of serous fluid. Under ordinary circumstances, however, the arterial and venous pressures are so regulated that this liquid does not accumulate, but forthwith finds its way into the blood through the lymphatics. When, therefore, dropsy of the peritoneum occurs we may practically consider it as resulting in consequence of some derangement of a physiological phenomenon. The capillary system, we know, is the seat of the phenomena of nutrition, absorption, and secretion, and it is to this system we must look for an explanation of the manner in which dropsy of the peritoneum takes place.

If in a healthy animal we ligature the prin-

cial vein of a limb it does not follow that by thus interfering with the return of blood we shall produce œdema of this extremity. When, however, we cut the vaso-motor nerves, the interstitial meshes of the area so disturbed are forthwith more or less markedly infiltrated by a serous exudation. In this case we destroy the tone of the vessels which is so essential for the maintenance of those physico-vital processes which are for ever going on, and by so doing we favour not only the transudation of serum, but interfere with the rate of absorption of the same.

The signs of free fluid in the peritoneum vary to a certain extent according to the character of the fluid and the condition of the abdominal organs. The usual signs are the following :

1. There is increase in the size of the abdomen.
2. The percussion note is dull over the seat of the fluid.
3. Fluctuation is as a rule readily elicited except when the quantity of fluid is small, or when it is of a thick consistence.
4. When new growths co-exist with free fluid these tumours are often plainly felt when the fluid is displaced by dipping, *i. e.* by pressing the tips of the fingers firmly, but sharply, against the abdominal wall.

5. If the abdomen is greatly distended, more or less dyspnœa may be observed.

6. The presence or absence of œdema of the lower extremities is of some diagnostic value.

Extensive hæmorrhage into the abdominal cavity constitutes intra-peritoneal hæmatocele—a condition which is dealt with under this heading.

It seldom happens that an abscess of sufficient size ruptures and produces the signs which are recognised as proving the existence of free fluid. When an abscess, great or small, bursts into the peritoneal sac a state of collapse is suddenly induced, and death as a rule rapidly ensues. Prior to rupture the patient may have appeared to be in perfect health.

Ovarian cysts occasionally rupture, and if the contents are practically innocuous the fluid thus extravasated may gradually accumulate in the abdominal cavity and produce those signs which indicate the presence of free fluid in the peritoneum. If the contents of a cyst which has ruptured are more or less virulent, peritonitis and death may ensue, but the resulting disturbance will vary according to the character of the fluid which is poured out. A multilocular cyst is much more likely to rupture than a unilocular, and this accident is frequently associated with a more or less extensive infiltration of the cyst wall by papillomatous growth. Even when no papil-

lomatous growths can be detected in such cases it is astonishing how frequently the subjects of ruptured ovarian cyst suffer—it may be years after the occurrence of this accident—from ascites, caused by papilloma of the peritoneum. In many cases these papillomatous growths are apparently benign at first, but they tend eventually to become malignant.

When the abdomen gradually increases in size in consequence of the extravasation of the contents of a ruptured ovarian cyst, the signs vary according to the character of the fluid which is thus poured out. If the fluid is thin the signs are similar to those of a simple ascites; if, however, as is more commonly the case, it was either originally thick and gelatinous or has become so in consequence of its intermixture with the natural fluid of the peritoneum, then the signs are somewhat different. The patients themselves are seldom able to help us in any way in arriving at a conclusion regarding the probable occurrence of rupture of a pre-existing tumour. The diagnosis can only be made after the most careful examination.

Signs produced by free jelly-like fluid in the Peritoneum from rupture of an Ovarian Cyst

The fluid being free gravitates to the most dependent parts, whilst the intestines float on the surface. The readiness with which the fluid moves about among the bowels depends upon its

consistence. If, therefore, the fluid is thick we cannot expect that it will gravitate to the most dependent part immediately we alter the position of the patient; some time must elapse before this phenomenon can be demonstrated, as the intestines are not so rapidly displaced by a thick as a thin fluid. When time has been allowed for gravitation dulness can be elicited over the seat of the fluid. In consequence, too, of the jelly-like character of the fluid fluctuation cannot, as a rule, be readily appreciated.

Free fluid in the abdominal cavity is generally if not invariably found in association with papillomatous growths of the ovaries and Fallopian tubes, and these growths may either be malignant or adenomatous in character. It is not necessary either that the peritoneum generally should be more or less invaded by a similar growth, as ascites is often present when the disease is confined to the tubes and ovaries.

In cases of this class it is more than probable that an increased transudation of serum takes place from the papillomatous growths, which are extremely vascular. When the effusion is associated with this new growth it seldom happens that the abdomen becomes greatly distended, and the quantity of fluid in the peritoneum seems to vary from time to time according to the condition and surroundings of the patient. When kept absolutely at rest, and as the con-

stitutional state generally is improved, absorption is apparently increased and transudation is decreased as the quantity of fluid is often under these circumstances greatly diminished, but only when the papilloma is of a benign nature.

It seldom happens that ascitic fluid is found in association either with simple ovarian cysts or with fibroids of the uterus; if, however, degenerative change, especially of a fatty character, occurs in the structure immediately underlying, and possibly invading the peritoneal covering of these tumours, then a greater or less amount of serous fluid may be found in the abdominal cavity. The degenerative change may be more or less extensive, but no evidence of change in the peritoneum generally, is observed. Free fluid in the abdominal cavity is occasionally noted in cases of fibroid of the ovary, but here too there can probably be always detected some degenerative change underneath and involving the serous membrane covering the tumour.

It is difficult to account for this phenomenon although it is evidently connected with the structural change which is so commonly noted.

In the majority of cases of malignant disease of the ovaries the abdominal cavity becomes, as a rule, rapidly and greatly distended by serous fluid, and this may take place even when there is no evidence of the general peritoneum being

infected. Sooner or later the lower extremities, too, usually become œdematous. I have, however, seen cases of primary malignant disease of the ovaries with secondary nodules in the general peritoneum and deposits in the liver, and yet no ascites.

The Differentiation of Free from Encysted Fluid

So long as a cystic tumour is small and tense it is impossible to mistake its nature; when, however, a cystic tumour appears to fill the abdomen, or when a flaccid cyst has become universally adherent to the anterior abdominal wall, the diagnosis is often difficult.

In ascites the fluid, being free, gravitates to the most dependent parts, and its location may therefore be altered by changing the position of the patient. As the woman lies on her back the percussion note in the flanks will be dull, whilst a more or less extensive area about the umbilicus will be resonant in consequence of the intestines floating on the surface. If now the patient lies on her left side the right flank will become resonant, and the area of dulness in the left will be correlatively increased. When the fluid is confined and is sufficient in amount to fill the space in which it has accumulated the flanks are resonant under all circumstances, and the configuration of the tumour, as illustrated by the area of dulness, is not materially affected

by the position of the patient. If the tumour is of pelvic origin the cyst ascends in front of the intestines; and when it does not fill the abdominal cavity extensively the abdominal walls are usually pushed forward by it, whilst the intestines are pressed back against the spine. In ascites the abdomen is uniformly distended, and as the patient lies on her back, the weight of the fluid causes more or less marked bulging of the flanks. Occasionally in ascites the umbilicus becomes sacculated, and projects above the level of the abdominal wall generally.

These signs may be modified. If the abdominal cavity is enormously distended by free fluid, we may fail to detect any area of resonance, and the condition may simulate a large unilocular ovarian cyst. In ascites the flanks may occasionally be resonant to percussion in consequence of the intestines being more or less fixed by adhesion. If the cyst, from any cause, has become flaccid, the intestines may pass in front, and the area of dulness will vary with the position of the patient. Occasionally an ovarian cyst may contain gas, either in consequence of decomposition of its contents, or because of a communication with the gut, and then the area of dulness may be intercepted by a more or less extensive area of resonance.

Free fluid may co-exist with encysted fluid.

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